The Builder.

VOL. XXIII.—No. 1194.

The National Provincial Bank of England.

IN a recent number, we published a plan and a view of the banking-room of the new building, erected in the City of London, of the National Provincial Bank of England, and intimated our intention of giving descriptive particulars of the design and structure, with some illustrations of the exterior.* We now carry into effect the intention. Our view shows the principal front;† of which the greater portion, or all excepting the entrance to the building, is in Bishopsgate-street Within. The principal entrance, which appears in the view, is in Threadneedle-street; and there is a second entrance from the same street, through the archway of the Oriental Bank, and into the new pathway that has been provided for an access from Old Broad-street to a side-entrance to the building. This latter entrance, besides giving one mode of access to the banking-room, leads to that part of the building which contains some of the chief offices of the upper floors, the managers' rooms, the principal residence, the board-room, and the directors' room.

The arrangement of the entrances was essential to the realization of the maximum business-value of the site, both as regards real accessibility, and the allowing the address to be properly in Threadneedle-street, as it is; and not the least important part of the merit of the architect's work in connexion with this building, is that part which is associated with the provision of the entrances. It has required, beyond skilful planning, considerable tact in negotiation: indeed, taking into account extraordinary difficulties of the site, comprised in the claims for light to numerous adjacent properties, the conflicting objects to be attained in this work have called for the exercise of ability of a kind that is almost the last to get reflected in public appreciation, and ability here that seems to have adequately responded to demands of a magnitude and a varied character unusual even in the city of London; as we may have said in previous notices of the design. Since it is seldom that we have so good a chance of showing to the general public, what are often the mechanical impediments to be surmounted in the production of good architecture, we take this opportunity of giving a summary of some of the conditions and circumstances which influenced and attended upon the preparation and accomplishment of the architect's design in the present case.

The plan that we have published (and which the reader would do well to place before him in following this notice,) shows that the building, as executed, occupies a piece of ground of about 220 ft. depth, and 90 ft. frontage, having considerable irregularity at the sides, (or especially, one of them,) and a want of rectangularity of the longer lines with the line of the principal front, entailing difficulties in the decorative treatment of the banking-room,—which the plan indeed shows, but that can be appreciated only by the practical architect. From want of space, the engraved plan does not show the western access from Threadneedle-street, but shows only a portion of the pathway from Old Broad-street. Also, omitting indication of a portion of the line of frontage of the original premises, it does not serve to show what was the exact nature of an arrangement that was made by negotiation with the South Sea House, by which (something being given up to the street,) the main entrance in Threadneedle-street was obtained. And it could not show the positions of windows in adjoining properties, overlooking the site; and one of them at the trifling height, from the ground-line, of less than 16 ft. The sill of this window became the datum for the height of the building in that portion of the plan which comprises the banking-room. The roof-covering of this division of the structure, (just discoverable in our view,) starting from the level of sills on each side, and without interfering with the access of light, of course could not be sloped at a greater angle with the horizon than 45 degrees; and the architect's difficulty whilst submitting to this restriction, was to get sufficient internal height for the banking-room, as well as a proper depth for strength in the supporting members of an arrangement of domical-lights in the ceiling of a room having a breadth of about 47 ft. The case was not so bad, as regards the banking-room, on the west side as on the other; but as to the general building, the rights of adjoining properties, to be considered, were numerous and varied.

The ground occupied by the new building includes the sites of the well-known Flower-Pot tavern and booking-office, of a shop that adjoined in Bishopsgate-street, and of the premises up to the time occupied by the National Provincial Bank. The latter comprised a building of some importance, known as the Old Mansion House, at the back, a forecourt, and some low office-buildings next the street, with a central carriage-entrance way.

The adjoining owners, lessees, and others who had to be dealt with, were the Commissioners of the Sewers of the City of London, who claimed some kind of right over ground in the three or four feet depth recess of the old front of the bank-premises,—and with whom and the adjoining owners, the arrangement for rounding off the corner next Threadneedle-street had to be made; on the west side, the proprietors of the Baltic and South Sea House Chambers, and of the Baltic Sale-room; the Oriental Bank Corporation, and the City Club; on the north, the Marine Insurance Company; and on the west, the proprietors of the extensive pile of buildings, called Gresham House, and the owners and occupiers of other property, including the shop No. 109, Bishopsgate-street.

One object in rounding off the angle formed by Threadneedle-street and Bishopsgate-street, has been alluded to; and the carrying into effect of the measure has comprised what is an important public improvement at that crowded spot in the City. If the angle of the new building had been left like that of the Flower Pot, (that is a right-angle on the ground,) two objects would not have been, as now, attained; and had the angle been *splayed* off, the architectural character of the building would have been very inferior to what it is. We should mention that the necessity for arrangement with the City authorities, might have arisen under ordinary circumstances: since power is given to the City to require buildings to be set back, on compensation to the owners. Ultimately it was arranged, between the architect of the new building, and the engineer to the Commissioners, that any right of the City to the recessed ground, which they had paved, should be waived; and that a certain amount in compensation, should be given by the City, for the little bit of ground next Threadneedle-street. Before completing this arrangement, it had been necessary to make one with the representatives of the South Sea House and Baltic Sale-room, the owners of half of the bit. These parties gave up their half, which had formed a very acute angle to their property next the Flower Pot; and they allowed the frontage of their entrance to be made in line with the main building of the South Sea House: they partly waived their right to restrict the height of the new building,—by which arrangement, the present elevation was obtained,—though a height running to five or six stories would still have been prevented; they gave up ground measuring some 9 ft. by 7 ft., which projected beyond the general line of division right into the portion of the site which is now occupied by the banking-room; whilst the Bank gave up ground next Threadneedle-street,—but with a stipulation that their cornice should project,—and ground next the low building of the Sale-room; and also gave a sum in money, part of which had come from the City. The Oriental Bank Corporation got a right of way to a piece of ground, of about 160 superficial feet: they had certain windows altered for them, from one wall which would have the new building immediately opposite, to the northern aspect where there would be good light; and they had built vaulting, which had to form the substructure of a portion of the way from Old Broad-street. The Oriental Bank leased the right of way from the public passage between Threadneedle-street and Old Broad-street, to the National Provincial Bank, and gave assent to various arrangements as to height of the rear-buildings of the latter bank; but which involved the requirement of setting them back. The datum of height of the banking-room on the west side, was given by the Baltic Sale-room; and the arrangements with the Oriental Bank allowed a side-light to be got to the end of the room. The City Club proprietors were understood to be allowed by lease with the Oriental Bank Corporation, to build on a portion of Fountain Court. The reservation, in this event, of light-and-air space for the National Provincial Bank, together with the arrangement of the way to the side-entrance, induced the adoption of the quadrant-corners with windows in them. The doubt about the future led to the further provision of ceiling-lights to the board-room and directors' room. The rights of the Marine Insurance Company, at the north, required that the buildings of the Bank for some five or six and thirty feet, should be only of one story in height above ground. Further than that distance, or where the old building had been, the new building is carried up four stories above ground; but, on the side facing the Oriental Bank, a portion of the top story may be said to be cut off, by sloping the roof down to a lower point,—this latter arrangement having still the object of not interfering with light to opposite premises. The small courts of Gresham House did not happen of themselves to restrict much the arrangements of the National Provincial Bank; but the really serious case of the "ancient lights" to premises nearer to Bishopsgate-street, has been already referred to. The whole matter of these restrictions relating to light, should be in a better legal state than it is. The negotiations connected with site occupied much time, in this case; and each one of them involved numerous interviews with the surveyors or legal advisers of the parties concerned.

The architect received his appointment in 1862. In February of that year he was first asked to advise respecting the site; and towards the latter part of the year, he took plans of the

* See pp. 834, 835, *ante*. † See p. 909.

old buildings. These last were taken down in the summer of 1863: in the autumn of that year, the Flower Pot was taken down; and the excavators' work and the putting in of concrete, to a general depth of 3 ft., and an occasional one of 8 ft., were commenced. The drawings were at this time being prepared for a building of a different character to that now erected. Such were the difficulties as to the adjoining properties, that the first design was cancelled after tenders had been obtained; and a new design was made; which the firm that had sent in the lowest tender, ultimately carried into effect on the basis of a schedule of prices which had been sent in. The building now has its own entire walls, external, or on every side. The brickwork was commenced in February, 1864; so that, inclusive of the concrete, the building may be said to have occupied about two years in its erection.

The building provides, on the ground-floor, the banking-room; the principal entrance, circular vestibule, and waiting-rooms; the board-room; directors' room, for taking luncheon; two managers' rooms, not named on our plan; a safe or strong-room, a waiting-hall, and the principal staircase and side-entrance, besides various lifts, secondary stairs, and lavatories and conveniences. On the basement, the whole space below the banking-room is appropriated for storage of books. There is also a strong-room, similar to that above; and there are a clerks' luncheon-room, storerooms for stationery, apartments for one of the resident messengers; and extensive lavatories and conveniences, at each end of the building, for the clerks. On the basement is the only communication that there is, except that through the banking-room, between the front and back portions of the building. The upper portion of that part of the building which appears in our view, contains one of the residences, besides a large space, comprising a room 49 ft. by 15 ft., available on the probable event of extension of business. In the rear main-building, on the one-pair story, which forms a mezzanine to the banking-room, are offices for the securities, and advance departments, and for the secretary, and a third strong-room. In the floor above, there is an office, 49 ft. by 20 ft., for annual meetings and future extensions; and there are offices for an inspector, and for the advance-ledger department, and a kitchen and scullery for the resident clerk, approached by a private stair. The top floor is set apart, entirely, for the resident clerk's dining, drawing, and bed rooms.

The banking-room measures about 118 ft. in the clear length, and about 50 ft. in breadth, including the recesses. The height to the soffit of the girders, is 27 ft.; and that to the highest part of the domical light, internally, is 38 ft. The circumstances of adjoining property have led to the decorative features which chiefly give the architectural character of the room. These include the projections from the side-walls, carrying the main-girders, the bracket-formed member rising from each of these piers to the soffit of the girder, and the very bold cove which springs from the cornice of the order. The line, at the angle of 45°, before referred to, ruled this last-named feature. Then, as to support for the girders: on one side of the building, the external part of the wall had to be kept down; and to get proper support, the thickness had to be projected internally. The brickwork of the piers had to be carried, straight up, to support the ends of the transverse or main-girders. These are of boxed plate-iron; and are 2 ft. 6 in. in depth, and have a span of about 41 ft. The main girders carry longitudinal plate-girders. On these latter, the bracketing of the cove rests. Each one of the three squares produced by this arrangement of the transverse and longitudinal girders, is formed into an octagon by diagonal bridging girders; and this octagon-framing (afterwards finished as a circle, in plaster) carries the cast-iron ribs of the domical light. These last are bolted at the top, to a ring which carries the pendant of the ventilating and artificial-lighting system.

In this last feature of the design, a skilful application of art is made, to well-conceived arrangements for the ventilating. A large tube or pipe carries the foul air above the roof; and in the centre of this is the ventilating-tube; so that the arrangement differing from what is now general, is chiefly in what belongs to decorative character and detail. There are sun-burners in connexion with the ceiling-lights in the board-room and directors' room; but whilst the glazing there has an elegant character, the connexion between the glazing and the lighting-and-ventilating contrivances is not made in the same artistic manner as in the banking-room. An iron-framed and glass-covered curb-roof, hipped at the ends, is carried externally over the whole space comprised by the three domical lights,—doors being contrived in it, so that entrance may be obtained to the space between the external and internal glazing for the purpose of cleansing. The glazing of the domes, which is in coloured glass, is fixed in framework-bars of zinc; of which material also is the intricate pattern-work of the pendants, open for ventilation. This latter work was executed in Paris for Mr. Tyler, who had the contract for the whole of the zinc-work. The domes measure 29 ft. 6 in. in the clear diameter; and they rise 7 ft. 6 in.

The difficulties of construction to which we have adverted, that were imposed by the restrictions from adjoining properties, seem to have entailed almost the only defects,—and they are after all trifling,—that are to be noticed in the architecture of this really fine room. One of them is the slightly-unsymmetrical appearance of the intercolumns of the recess at the main entrance to the banking-room,—where the angle of the Baltic Sale-room has come in the way: nevertheless that part of the composition is effective. On the piers, the columns attached to their angles present themselves as half-columns, instead of three-quarter columns. Half-columns are not elegant. The pedestals to the columns are finished of mahogany and ebony, instead of marble, as intended when our first view was made. At the junction with the soffits of beams, of the brackets from the columns, there was when we were at the bank, a break in the continuity, instead of an easy sweep of the curve into the horizontal line. This has resulted entirely from the difficulty of getting a harmonious junction between the columns and girders, that would not be discordant with the curves of the arches at the ends of the room. No one would discover the origin of the defect (which perhaps will be corrected,) without it were explained to him. Our own appreciation of the difficulties that the architect has overcome, would have been less complete, had we not detected the one or two matters where he has been rather too heavily weighted. The shafts of the columns are of Ipplepen, Devonshire, marble; and are in one block, 12 ft. in length: the bases are of Irish black marble. The space in front of the counter, for the public, and which forms a passage-way between the two entrances, is paved with Sicilian marble, and Irish black, the former in squares with quadrants cut out of the angles, and the latter in filling-in circles or dots. The whole of this marble work was executed by Mr. Field, as before stated. The circular vestibule of the entrance is paved with yellow Mansfield and Hopton Wood stone, and Bangor slate. The capitals, in the banking-room, are of Huddlestone stone; which is cream-coloured. The architect has, on consideration, substituted a plain space,—or block, as it appears, over a group of columns,—for the usual arrangement of frieze and architrave. The *loggie* of three arches, with their clustered columns, make each end of the room a most effective feature of the entire composition. Next the street, mirrors are placed at the opposite ends of that part of the room; and they produce capital effects, not only inside, but as the room is looked into through the windows, from the street. Much ornament is introduced in the plaster-work. The ordinary modelling was by Mr. Garland. Generally, the plastering is in Keene's cement. But, perhaps, the most important ornamental details of the room, are the architectural and sculpturesque decorations of the panels which there are between the columns. The figures and emblems on these, are intended to represent the growing riches of the land, and those found in the waters. At the sides of the room, the composition in each case is made up of a wreath, festoon, or similar form, representing corn, flowers, oak-leaves, or other vegetable production, or shells and sea-weed, enclosing a circular space for the emblem, and having as supporters the figures of children in various attitudes. Thus, the plough, the hive, the spinning-wheel, and the ship appear in some cases; and the children hold the sickle, the hammer, the shuttle, the fishing-net, or other implement. The four panels at the north end of the room show the production of gold, and its coinage, with the business of banking: one long panel, with nine figures of children, illustrates the finding and washing of the gold; another, with a dozen figures, shows smelting and operations connected with it; a third panel portrays Coining; and the last is Banking. There is considerable merit in these works; which are partly in high, and partly in low, relief; but the outlines have been in some cases injured in painting the grounds. The groups were modelled by Messrs. Bursill, and John Underwood. The bust of the late manager by Marochetti, and not a very superior work, is now to be placed on a bracket under the panel in the centre of the north end of the room. The walls and ceiling are decorated in polychromy. The whole of the fittings of the room seem to be perfect in contrivance; and, with those in other parts of the building, are in good taste.

Particulars of the exterior of the building, or the portion comprising the principal front, are given to great extent by our view, better than they could be in verbal description. All views, however, fail as to the effect produced by architectural details that have been studied as these have been.

As the work is executed, there is not a single ornamented moulding in the entablature; the main features are the dentils, and block-modillions. This treatment seems to us not wholly accordant with the somewhat rich, studied, and certainly in parts very original, character of the details of the rest of the front; but the architect has throughout considered his work more than we have for the purposes of this notice. It has now, we believe, been decided to place upon the frieze in bronze letters, gilt, the words "National Provincial Bank of England." This may go to supply the want. The names of the branches are cut on the wide reveals of the entrance, and fill a part in the performance.

The front is about 53 ft. in height. The columns, attached, are 30 ft. 10 in. in height; and are placed on pedestals, and a surbase, which together rise 9 ft. 8 in. from the pavement where the ground is lowest. The shafts, cabled the entire height, are 25 ft. 8 in. in height: the capitals, of Composite character, but freshly designed, and each with a lion's head in the centre between the volutes, are 3 ft. 6 in. in height; and the bases are 1 ft. 8 in. The entablature is 7 ft. 8 in. The blocking course is 2 ft. 10 in. The figure, or group, in each case, is about 9 ft. 3 in. in height, with its pedestal, or 8 ft. without. The windows in the main front are 15 ft. 6 in. in height to the crown, and 6 ft. 9 in. in the clear width. Each is glazed with a single sheet of glass. The architectural carving was executed by Messrs. Colley.

Sculpture in groups, single figures, and panels, has contributed largely to the effect of the exterior. The groups are over the coupled-columns; and the single figures are over the single columns. Commencing from the farthest point on the rounded end of the building, we have Manchester, represented by a female figure,—and having as "supporters," seated, a negro with raw cotton, and a workman with a bale of goods: next we have England, represented by St. George, and supported by Britannia holding a wreath and shield, and by a female figure to represent Navigation: next comes St. David of Wales, with an old harper, and a miner with his pickaxe: the next is a single female figure, representing Birmingham, and having the hammer and anvil: then there is a figure with a tazza, emblematic of Newcastle and the pottery districts: next is Dover, with a mortar and shot; and lastly is a fourth group, which represents London, by a female figure with a mural crown, and holding a key,—this figure being supported by one of old Father Thames, and by a female figure, with fruits of the earth, to typify Abundance. Two of these groups ("England" and "Wales") we represent.

The six panels, following the same direction, are filled with subjects representing the Arts, Commerce, Science, Manufactures, Agriculture, and Navigation.

The whole of the subjects of the panels were modelled by Mr. John Hancock; and they were carved by various hands. Three of the groups at the top of the building, and one single figure, were modelled and carved by Messrs. Bursill and John Underwood; whilst one of the groups, and two figures, were modelled by Mr. Miller, and carved by Mr. James Underwood. The circular panel of the entrance-doorway is filled with the arms of England and Wales. The architect has acted judiciously in rounding off the angles of the podium at the entrance.

Taste is shown in the window-reveals and chimneys of the four-story portion of the building, and scarcely the less so that the treatment

is plain. The doorway of the side-entrance exhibits originality, as well as taste, in the treatment of its carved archivolt.

The ventilating arrangements, extending to all parts of the building, including the basement, have been carried into effect with the assistance of Mr. W. W. Phipson, the principle being stated to be the same as that adopted in recently-built hospitals on the Continent, and known as the *Système* Van Hecke. The blowing-apparatus is worked by a small steam-engine. In the board-room, and some other rooms, Boyd's stove-grates are used. The general gaslighting is by Messrs. Strode. Mr. Jennings has supplied the fittings of lavatories. The general contractors were Messrs. Trollope & Sons, as already stated; and they made all payments for special work of whatever kind.

Mr. John Gibson, the architect of this building, has produced what, as we have said more than once before, is an important addition to the architecture of the City; and, besides the credit due to him for freshness of study, and the proper use of models, which have resulted in a good whole, and good details, there is something due to him for the attempt, the nature of which was explained by us some time ago, to prevent that rapid discolouration of stone-work which is so inimical to the effect of architecture in London.

THE DEVELOPMENT OF NORMAN ARCHITECTURE.*

STYLES are limited by their peculiarities, which may be relative defects as between style and style, but have a propriety and consistency as associated and amongst themselves. The exclusive affection for the round arch is a limitation that favours when it does not enforce several others; taken in conjunction with the strength of materials, it enforces in structures of large scale a comparative solidity and close spacing of piers and supports in order not to encounter risk from the great weight of the flat portion of a large semicircular arch. Hence the lighter effects, though not excluded from the style, are to be gained only in the smaller constructions.

Other limitations under which the style grew up were comparative simplicity, not to say rudeness,—certainly inartificiality of mouldings, and then a general though not absolute and still less necessary exclusion from ornament, of vegetable forms in any degree approaching even to conventional types, much less to natural.

It is quite open to an artist to elaborate a round arched style of architecture without these limitations, but also within them; and to this latter, the historical form and exemplar, we confine ourselves.

The usual Norman ornaments were such as could be wrought with the axe, with small aid from the finer chisel. The variety of these is not a little remarkable; and the ingenuity and invention displayed deserve respect and often genuine admiration, both in variation of primary types and also in alertness of following out the hints produced by development in application. The chevron or zig-zag is, of course, one of the favourite types, plain or enriched with a series of lines, and flat surfaced or rolled. When such an ornament is disposed round a circular arch, half-diamonds will be left at the edge of the intrados, which are often completed by resumption of the chevron on the under-side and the remainder from one pattern becomes motive of another. Then the zig-zag is variously presented with points horizontal or vertical. This is but an example of the developments that might be followed out through each primary type of ornament.

We are much disposed to think that the predilection for the zig-zag ornament was dependent originally on associations of symbolism; to speak our own impression plainly, while admitting that we cannot claim assent from others, we feel no doubt that it was at first adopted and understood as typical of water, of the water of baptism especially, through which the world without was admitted into the church, and then of the holy water,—the horror of the powers of darkness and malignity. It were going too far back and too suddenly to refer immediately to the Egyptian designs of kings consecrated by purifying priests, from whose vases descends the stream of Nile water in a curve of conventional ziz-zag; yet the step is thence but short to the symbol of the water-bearer in the Zodiacal series which was familiar enough, and favourite too, with the masons and sculptors of the Norman doorways.

The general pavement of the Baptistery at Florence is a sort of mosaic of marble tiles set edgeways in various patterns, for the most part wavy or zig-zag in alternating and contrasting lines of white, black, and dullish red. When the central space was occupied by the original great font these watery patterns reached up to its very base or margin. In the Baptistery at Pisa we still see the fine polygonal font with round deep basins at the angles,—on the same model, no doubt, as that at Florence, which Dante is so careful to explain that it was by accident he broke, in saving a drowning child. The font itself is remarkable for its combination of angular mosaics, floral sculpture, and coloured slabs; the large central part is inlaid at the bottom, black upon white, in an elegant wavy pattern that recals the Florentine floor, and confirms the meaning ascribed to its decoration.

Other illustrations from Mediæval painting are available, but these may suffice.

The sequence of inventive modification displayed in a fuller series of well-arranged engravings than is yet obtainable, would furnish much instructive study. This sort of invention, it must be said, is not in itself and in its rudiments beyond the reach of barbarous nations. We are familiar with it displayed in carvings of canoes and paddles and war-clubs, in the bordering of shawls and patterns of carpets of very uncouth peoples. It ceases, however, to be barbarous, and attains the dignity of the barbaric, and even something more, when executed with a certain grandeur, and with such a feeling for contrast in proportion and in sequence as we meet in Norman arches, and especially in Norman doorways. There is still another stage of development,—the epoch of the last purification and refinement which the Norman never quite reached, and which is seen best exemplified in a comparison of Greek transmutations of commonplace Assyrian details, into the honeysuckle, the guilloche, the volute. The Gothic styles that succeeded the Norman treated its decorations to a considerable degree in the spirit of the Greek—witness the affiliation of the dog-tooth and ball-flower,—though they discarded altogether far more than they undertook to develop and refine.

Capitals, string-courses occasionally, and the faces and angles of recessed archivolts were the usual recipients of these carvings, which seem to have been ordinarily executed after the stones were fixed. The same members, carved or uncarved, comprise the chief of the quasi-mouldings or modifications uniform in section of the mere plane surface.

The ordinary Norman style accepted here also, a very severe limitation, or only acquired by degrees the art of getting beyond it. The architects indicate but little appreciation of the essential function of the most characteristic of all mouldings, the projecting cornice or hood moulding, and still less of the specific contour of the drip moulding, the very eye of the entire organism. Hence there is often a default in making the upper members duly project in profile beyond the lower, or in giving to the upper the drip-undercutting; or when this feature is better provided for, the importance of it does not receive recognition in subordinate reappearances.

In the recessed doorways the uniform depth of the archivolts is constantly relieved by variation of the carving, and then by some of the square edges being rounded off, and the roll completed by a sinking on either side; but the limit is soon reached here.

When both edges of a vault rib are rolled, a flat band is left, more or less wide, between them, according to their magnitude, which receives a limit, in one direction at least, by the projection of the rib. Then, in a narrow rib, the entire soffit may be formed into one large roll; and, by the application of such narrower ribs upon the flat bands of broader, systems were built up, and so onwards. In the treatment of arches of several orders, which are in principle the same as these systems of ribs, many experiments were tried to give effect and variety; and in such instances, as in the nave at Hereford, we can observe how the Norman shifted the successive order of roll and zig-zag until he recognised principles of grouping which his successors the early English builders had to learn over again for themselves. In the most western pier arches the innermost archivolt edges are roll-moulded, and the two superior zig-zagged. A little further on, the architect has discovered that distinctness and effect are consulted by placing the roll-moulding intermediately; and that the change would expose his earlier error, was one of those considerations which in these days were allowed no weight at all. The principle of right articulation of ribs, capitals, and piers was one of those that were missed, and found and lost over and over again.

As regards the proportions of Norman buildings, they are, no doubt, often clumsy enough; but clumsiness is no inveterate essential of the style. Dignity on the one hand and grace on the other are not only within reach, but were from time to time successfully achieved.

These architects had at least made one of the greatest, and certainly the indispensable, discovery, about proportion, inasmuch as they fairly appreciated its importance, and had lively sense of many of its resources. The schools and generations that succeeded them were in sympathy with them on these as on other points, with the additional advantages of more skilled labour and wealthier patrons; but the key-note of the movement was already struck. The Norman builders and their patrons were already athirst for novelty,—for novel beauty to be sought in novel forms,—sought boldly, sought confidently, sought independently. The future,—their own present,—it is clear that they believed was great with discoveries equal at least to any that had gone before; and each successful architect had his work scrutinized by a successor with eagerness to appreciate,—to appropriate success, no doubt, but still more hopefully eager in search for hints that remained but hints,—for new difficulties growing out of new combinations that might have been manfully struggled against, but still awaited their last solution.

Proportions of plans, elevations, sections, were as eagerly re-cast and re-combined as ornaments, distribution, constructive adjustments; and examples were given that builders in succeeding styles might have saved themselves much time and labour by taking warier note of.

The men, like the style, had their limitations, no doubt; and these were sometimes in both cases essential to self-consistency. When the limitations of certain predominant types and undisturbed assumptions began to be broken through, it could not be too soon that a vehement change should follow, should press on, and new men come in with imaginations otherwise prepossessed. A great break was welcome, and it came no whit too soon albeit that after perusal of the remains and ruins of Norman architecture it seems to us that the style never had the chance of quite doing its best; and our minds are haunted by imaginations that hover between broken remembrances gradually dissipating, and germs of conceptions of a finer Norman cathedral than the world ever knew, that ever seem gathering and ever dispersing again round centres that shift and settle, that blend and disappear, as in the uneasy delusion of a fleeting dream.

The prevalence of this style in its various phases as rude and severe, enriched and refined, may be liberally included within the century and a half preceding the murder of Thomas à Becket in 1170, in mid-reign of our first Plantagenet or the great third Crusade in 1183. There was, as there always will be, a notable overlap of styles; but the annals and monuments of Canterbury evince the vigour of the contrasted fashion that was pressing to the birth; and the progress of Lincoln Cathedral under St. Hugh before the last years of the twelfth century were out, declares how resolutely it went onward to its maturity. The rapidity and decisiveness of the break of taste is a mark of many things besides the development of architecture. No doubt, population had increased, skilled workmen were more skilful and more numerous, and wealth was more at command; but civil, which in truth in these days was military government, and ecclesiastical government were developing in themselves and in relation to each other; and so were speculation and dogma, theology and thought. The leading names and careers of the century mark a group of great mental manifestations, that are as defined in comparison with those that succeeded as the architectural groups of round-arched structures, whether on the Rhine, in Burgundy, in Provence, Normandy, England, or Spain, that belong to their period are in contrast to those that illustrate the next. The masculine self-reliance and reliance on nature and nature's

* See p. 895, *ante*.

truth that belong to the age, speak in the lives and utterances of such men as Berengarius of Tours, Peter Abelard, and Arnold of Brescia; scarcely in a less degree in the conscientious speculations and candid controversy of a Lanfranc and an Anselm, boldly tentative, not doggedly conclusive, and frankly expectant of truth yet to be drawn out of the depths by persevering and resolute daring, that would deserve to be matched with any pearl that ever yet was won. From the Abbey of Cluny, on the other hand, of which the church (dedicated 1131) was one of the most important works of the age, came forth first Hildebrand—Gregory VII.—intent on increasing the power of the Church by subjugation of its unruly members, and especially by enforcement of grimly-accepted celibacy; and then Bernard, of Clairvaux, anticipating the centuries in his recognition of the danger to the Church from unlicensed thought, and his resolve, without regard had to thought in any way, to suppress it. Discipline and organization were marching on in the Church, while with parallel advance a military peer, like William the Conqueror, was building up the loosened ruins of the Saxon fabric into a stern and stalwart empire. The two systems rose together like the feudal castle and monastic foundation that symbolize their contrasts, and also scarcely less their cognate genius, and by the end of our period they were ready to come into collision. The murder of Becket is typical of the contest and its results. His blood stained the stones of the ancient cathedral, and the offerings that poured in to the shrine of the martyr raised the elaborated and glorified fabric of the new. This is but a single sign of the general fact that the Church now had founded its power, and felt its competence to guard and exercise it for good and ill. The result is seen in the great works of the next century, which gives us again a typical Pope in the domineering Innocent III.; again a characteristic development of thought in the monumental systems of the orthodox schoolmen, Albertus Magnus, Aquinas, Bonaventura, Scotus, and the equally yet scarcely more thoroughly harmonized architectural systems of the cathedrals included in the Early English style of our own country and that marvellous parallel array in France that crowd the annals of the thirteenth century.

THE FRENCH ARCHITECTS' GAZETTE.*

We have before us the current numbers of a journal devoted to architecture and building, edited by the son of M. Viollet-le-Duc, in conjunction with M. A. Baudot, and published at Paris every fortnight. We are so accustomed to see leading places taken by our French neighbours in most matters relating to taste, that we are somewhat disappointed at the contents and style of this gazette, now in the third year of its existence. After turning over the pages, very little more remains upon the mind than an impression of the excellence of the paper, the width of the margins, and the large size of the displayed type. Indeed, these are the three features of the publication. The artistic and literary contents are of short measure. One number illustrates a school for young girls, in three plates, consisting of seven elevations, sections, and plans; recommends, in a second article, twenty lines long, the employment of the stone of Souppes; gives a letter from Florence; then devotes seven columns of the largest type to a list of the individuals who obtained prizes at L'École des Beaux-Arts; notices the prospects of subterranean railways in Paris; and concludes with some remarks upon the proposed Exhibition of 1867. And this costs 25 francs per annum, or a franc for each number. Assuredly we manage some things better in England than they do in France. The extraordinary diffuseness with which the designs are reproduced is not to be accounted for on the ground of the originality displayed. The girls' school just mentioned is externally nothing more than a detached villa, toned down to a warehouse severity, without any chimney-stacks; and internally, the principal freedom of treatment consists in apportioning a large *salle* to two purposes; the one being religious exercises, the other a playground in bad weather,—the altar being railed in with a *grille* for protection from the young ladies while romping on these occasions. Nor are the other numbers of more startling interest. No. 12 illustrates a manufactory at St. Denis, by M. Saulmier, on four sheets of plans, elevations, and details, introduced by a few preliminary remarks from M. Baudot. If these are addressed to professional readers, it would appear that our neighbours are a long way behind us, for there are few English architects who require to be told now-a-days that economy is not incompatible with taste, and that it is possible to give character and effect to the plainest materials. In the same number we have more about the proposed Exhibition, with a plan; another letter from Florence; a notice of a paper on the responsibilities of architects, by M. Le Bègue; a long list of the local committees in the section of the fine arts in the proposed Exhibition; and a *Revue de la Quinzaine*, or gossip of the fortnight, which consists principally of the names of persons who have won prizes or obtained honourable mention for art-work, each in a separate paragraph of large type. Looking more particularly at the notice of M. Le Bègue's *brochure* on the responsibilities of the profession, we perceive that the work in question deals with a hardship in a regulation of the Code Napoleon, and another of the Council of Civil Buildings, in which both the responsibility and charges of architects are regulated. The first says, that if a building given out at contract prices should fail, in whole or in part, by fault of the foundations, the architect is responsible during the time regulated by prescription; and the other sets forth that if an edifice constructed at contract prices fails, in whole or in part, by fault of construction, or by fault of site or foundation, the architect and contractors are responsible for ten years. M. Le Bègue points out that works by contract are thus placed on a level with work by measurement, and proceeds to consider the subject under eleven headings, in the course of one of which he shows that some French architects content themselves with 1½ per cent. on the cost of large works, whilst others enjoy 5 per cent. We do not gather exactly when it was that M. L. Mouton laid his plan for a subterranean railway before the Minister of Public Works; we perceive, however, that his project comprised a main artery running from the Boulevard Mazas to the Hippodrome of the Bois de Boulogne, having at its central point, situated between the Seine and the Palais Royal, five diverging rays communicating with the various lines of railway. The formation of a tunnel under the Seine will be, M. Mouton expects, but child's play to French engineers after the execution of the Thames Tunnel by Brunel. The cost, he believes, will not exceed, in round numbers, 80,000,000 francs. He then enters into a few mathematical and technical particulars to show his readers that the project of a subterranean railway is not an eccentric or adventurous proposition. Those in London, he adds, are very popular and much frequented, and yield such good profits that companies are being formed for the construction of others.

As a leading article for No. 13, we find an attack upon l'École des Beaux-Arts, which is at least vigorous: like all the other papers, the name of the writer is attached to it, by which means much of the power of the charge is lost. M. Stanislas Ferrand remarks, that France has but one school,—that of Paris,—which has become the university of the arts. The school of architecture is more than a school, it is a national institution, which holds in its hands the destinies of art. A people is grand, he continues, in little paragraphs, each one sentence long, by its art as by its industry, by the genius of its artists as by that of its men of letters and legislators. The school has a large task to perform: has it accomplished this grand work?—No. Does it work towards its accomplishment?—No. Does it seek the means to be able to accomplish it?—No. It would be irrational to see a Greek temple at Memphis, or an Egyptian temple at Athens, and it is equally irrational to see in Paris houses and monuments grimacing the features of those of Greece and Rome. Architecture has philosophical rules, as well as a high moral mission. She ought to be true and positive. A theatre ought not to resemble a barrack; nor a national library,—the sanctuary of intelligence,—be like a concert-hall. The fruits of the School of les Beaux-Arts are sad. They prove that the teaching of the school is bad, its organization is bad, and that l'École is bad. No. The school that holds in some measure the destiny of art has not yet understood the importance of its mission. She teaches neither the true science of architecture, nor its history or philosophy. Whilst we are French in spirit, in our manners, our laws, our politics, and our religion, we are Greeks and Romans in art. The laws of beauty are not immutable. Egyptian beauty is not Greek beauty, nor is Greek beauty Chinese beauty. Art is beautiful when it is superior to traditions, and equal to its time and country. Why do we not wear Greek vestments as well as use Greek art, for they are superior to ours in form? They do not conform so well with our manners and climate. It is the same with Greek architecture. Art follows the great march of humanity; it descends when humanity descends, and elevates itself when humanity does the same. It was not for nothing that Christianity upset the Druidism of the old Gauls and the polytheism of Greece; it was not for nothing that we have had wars and revolutions, empires and republics. In these convulsions France has been regenerated, and has come out of the past with another language, another literature, another art. L'École, continues M. Ferrand, on pain of passing ignorant of history, cannot deny this generation of art. At what conclusion have we arrived, he inquires, and immediately answers for himself. We conclude that the results of l'École des Beaux-Arts are bad. The school is bad; its studies are false and incomplete: its aim, instead of being the elevation of the arts, has been their degeneracy. We conclude that the classical dogma is not convenient to our wants, our ideas, our genius. There is a French art which ought to be the affirmation of our progress. It is for us, artists, *savants*, thinkers, to seize, to develop, to fructify and accomplish this grand work of our social destiny. We will not damp the ardour of M. Ferrand by suggesting that an entirely new phase of art, belonging exclusively to the present day, may be difficult to find, but will take it for granted that there is a French art of the nineteenth century only wanting to be properly presented at court, and then continue our glance through the white pages of the *Gazette*. The illustration of No. 13 is a seven-storied house in the Boulevart du Prince Eugène. It has two tiers of shops, and each story has seven windows in the principal façade. M. Bœswillwald is the architect. Details of the windows of the *entre-sol*, the balconies, and the *porte-cochère* are given on a large scale, and show considerable versatility, but no new style. We then come to another letter from Italy, some further remarks upon the arguments of M. Le Bègue, and find ourselves face to face with all the subdivisions of the organization of the municipal service of public works, followed by similar details concerning the municipal waterworks; long lists of the jurymen of certain sections of the Central Union of Beaux-Arts applied to industry, 1865; and a fragment of an article on the capacity of contracting parties, by M. Emile Jay, avocat; concluding with a letter addressed by the Préfet de l'Oise to the mayors of his department, relating to public works and the *honoraires* of architects. Monsieur le Préfet is good enough to point out to the mayors that, inasmuch as there is an unusual quantity of municipal work going on, it behoves them to exercise extra economy with the funds. He considers that the practice of paying architects a per centage upon the whole cost of the works, whether it be 3 per cent., as in the case of the architects of the *arrondissements*, or 5 per cent. in the case of *free* architects, had the effect of inducing them to run up the cost beyond that first decided upon; and he pointed out an antidote to this evil, in an order which set forth that no architect should receive any commission upon supplemental estimates, unless it could be shown that they arose from causes over which he had no control. The préfet does not insinuate that honourable men are always preoccupied by a pecuniary feeling; but he asserts that it is difficult for them to resist the fascination of their art, or to refrain from developing the perfection of their work; and it is, moreover, always a grave inconvenience to place agents between their duty and their interest; so he prays that the mayors will see that the order may be strictly carried out, and that they will receive the assurance of his most distinguished consideration.

We will look at one more number of the *Gazette*. This contains further details, with a plan, of the first floor of M. Bœswillwald's enormous mansion on the Boulevart du Prince Eugène; as well as two plans, an elevation, and two sections of a

* "Gazette des Architectes et du Bâtiment." Journal bimensuel, publié le 5 et le 20 de chaque mois, sous la direction de MM. E. Viollet-le-Duc Fils et A. de Baudot, Architecte. Bureaux, 13, Rue Bonaparte. A. Morel, éditeur. 1865. Nos. 10, 11, 12, 13.

chapelle funéraire, by M. Collard, architect, which is but a meagre little affair, such as cover family vaults or cemeteries, of no particular style. Over a semi-circular headed entrance-door starts a small column, just above the cap of which is spread out a scroll, and over that is piled a shield, with a crown beneath a semi-circular label terminating in two heads. From the gable rises a Mediæval cross. This tiny chapel is lighted by a small narrow light on either side, with the addition of a cusped circular one at the end. The letter-press tells of more prizes. L'École des Beaux-Arts offers a grand prize for the best design for a vast hotel for travellers, and enters into all the requirements of the programme; and M. Baudot proceeds to criticize, in a wholesale kind of mode, the drawings sent in by the competitors. He will not stay to examine each project in detail, for that would be to enter into repetition without end: in all the same defects exist. Difficult Monsieur de Baudot! M. David Sutter, peintre, contributes an article on æsthetics. Another letter from Florence tells us more about the well-known Florentine palaces; and we come to the review of a *brochure* on strikes, by M. Stanislas Ferrand.

Our author treats the subject with a vigour similar to that spent upon L'École des Beaux-Arts. He inquires of workmen, in a series of short sharp questions, like rifle practice, whether they know a better way of developing activity, address, general aptitude, and intelligence of execution in a workman, than setting him to piece-work? Whether they know of a more equitable mode of remuneration than that founded upon quality and quantity of the work done? A radical, just, and equitable reform is easy to put in operation. M. Ferrand sees this in a methodical classification of the different kinds of stones used in Paris, with a price per size for each kind. By this means a grave cause of disorder in piecework disappears, —the discretionary power of foremen. M. Ferrand denounces the foreman as a little despot, who has elevated himself above his comrades, and surrounds himself with them as the chief of a state surrounds himself with courtiers. His favourites are enabled to earn as much as 300 francs per month, whilst others can manage to gain but 100 or 150 francs in the same time.

But with the classification M. Ferrand points out this power would fall to the ground, the liberty of labour would be complete, and the rights of every one respected. Nor would it be difficult to make. Ten delegates might be appointed by themselves to effect the classification and establish the tariff, which could then be presented to the masters, who, M. Ferrand is sure are clear-sighted, and comprehend their own interests too well to refuse to the workmen "*une entente cordiale*." This is followed by further particulars relating to the committee of admission of the *Exposition Universelle* of 1867, another "Review of the Fortnight," and a long complimentary account of a visit to the *ateliers* of MM. Baudeville & Bourbon, ornamentists. There are no legitimate advertisements in the *Gazette*, but we cannot shut our eyes to the fact that the last-mentioned account bears a remarkable likeness to those businesslike expedients. An artist has been visiting Toulon, and he addresses thence a letter to the writer, M. J. Berl, from which he extracts passages in praise of the ornamentation of the theatre there entrusted to Messrs. Baudeville & Bourbon, of Paris. This letter of the artist induces M. Berl to visit the *ateliers* in question, and he is equally penetrated with the sentiment, the artistic fitness, the elegance of conception manifested by the *ornementistes* named. The material used is *carton-pierre*, and the objects produced are bas-reliefs, figures, statues, allegories, &c., all of which depose to the profound taste presiding over the establishment. Some ornamental sculptors content themselves with reproducing the *chefs-d'œuvre* of all time and all schools, and adapt them, with more or less skill, to all edifices, with, however, considerable sameness; but the Messrs. Baudeville & Bourbon employ their imagination with the happiest result, as the reader may view for himself either at the Hôtel de la Rue François I., or in the *salons* of the Jockey Club, two of their most recent works.

Before closing these notes on the *French Gazette of Architecture and Buildings*, we will quote a programme of the dates set apart for the completion of the different operations appertaining to the proposed Exhibition of 1867, as exemplifying French system:—

Before the 15th of August, 1865. Nomination of the committees of admission for the French section, and notification to the Foreign Commissioners of the space afforded for the products of their nations.

Before the 25th of August, 1865. Constitution of the committees of the departments; announcement to the French exhibitors, and notification of the space attributed in the French section, to each of the classes of products denominated on the system of classification (piece B).

Before the 31st of October, 1865. To send to the Imperial Commission the applications for admission (piece C), and the claims concerning the admission of French exhibitors.

Before the 31st of October, 1865. Completion and despatch to the Imperial Commission, by the Foreign Commissioners, of the plans of the stalls of their nations, to a scale of 0·002m. per mètre.

Before the 31st of December, 1865. Completion of details of plans of stalls to a scale of 0·020m. per mètre, for the French section, and notification to French exhibitors of their admission.

Before the 31st of January, 1866. Completion and despatch by the Foreign Commissioners detailed plans of the stalls of their nations, to a scale of 0·020m. per mètre, and the particulars destined for the official catalogue.

Before the 1st of December, 1866. Completion of the constructions of the palace and park.

Before the 1st of January, 1867. Notification to French artists of their admission.

Before the 15th of January, 1867. Completion of the special stalls of exhibitors in the palace and parks.

Before the 6th of March, 1867. Foreign goods are to be admitted at the ports and frontier towns.

From the 15th of January to the 10th of March, 1867, packages are to be received and unpacked in the enclosure of the Exhibition.

From the 11th to the 28th of March, the unpacked goods are to be arranged on the stalls for which they are destined.

On the 29th and 30th of March, there is to be a general clearing-up in all parts of the palace and park.

On the 31st of March, a revisal of the whole of the Exhibition.

On the 1st of April, the opening of the Exhibition.

On the 31st of October, the closing of the Exhibition.

From the 1st to the 30th of November, 1867, the removal of the goods and stalls.

BRITISH ARCHÆOLOGICAL SOCIETY IN ROME.

THE British Archæological Society founded in the last spring at Rome would have resumed its proceedings earlier in the present season, had the foreign concourse, on which so many interests of this capital depend, begun to infuse new life at the ancient centre as early, or in the same numeric force, as usual. But such has not been the case; and the failure of that annual movement from other lands towards Rome, is this year the theme of general lament among her citizens, being attributable partly to the visitation of cholera in the south, partly perhaps to apprehensions of political disturbance. Notwithstanding discouragements, however, the British archæologists have not forgotten their engagements with their co-nationals here; and those members of the committee who are resident have taken steps towards the ordering of the Society's operations in the winter; two preliminary meetings having been held at the English Consulate, with assistance just sufficient to form a quorum, and on the last occasion with that of the Hon. H. Walpole, one of the Society's vice-presidents. At these meetings, on the 27th of November and 2nd of December, various questions were discussed as to what should be done or left undone; and it was advised that another programme should be drawn up somewhat fuller than the one first circulated, explanatory of aims and method, a draft of which new edition was presented and approved on the 2nd instant, one of the few additional clauses being designed to indicate the unpretending and *suggestive*, rather than *didactic*, character assumed by the Society, as not an exclusive assemblage of *savans*, but an organization for carrying on studies and assisting those interested in like studies at this centre of art and antiquity. It was decided that, contrary to the original project, the exclusively national character should be preserved, none but British residents and visitors admitted; though, if such be the desideratum at any time, it might be allowed to invite the co-operation of Italian archæologists in supplying papers on suitable subjects, to be translated and read before the Society in English. A range of subjects to be treated during this or ensuing seasons was proposed: Mr. Severn, our consul, pledged himself for some notices of ancient fresco-painting; Mr. Shakspere Wood, the Society's secretary, undertook to illustrate antique sculpture at the Vatican Museum; and it was agreed to invite Father Mullooly, of the Irish Dominican convent, S. Clemente, to explain the very curious paintings in the subterranean church discovered there through his meritorious exertions, by way of entertainment and study for the inaugural meeting of the season, on which occasion the auditors will be invited to repair to that church, lighted up for the assemblage. The Society's reunions will occasionally be for the object of excursions to historic sites in the Roman vicinity, as well as to scenes of antiquity within this city's walls, to museums, or public galleries. Up to the present, the number of members is thirty-four; of associates, fifty-three; the former subscribing 5 scudi a year, the latter paying for monthly tickets at 1 scudo. Ladies are admitted in both classes. It was determined a second time to apply, through our consul, to the authorities, in order to secure the distinct sanction, without, of course, any demand for official recognition from the Pontifical Government. More than this we are sorry not to be, as yet, enabled to report respecting the labours or merits of the nascent British Archæological Society.

The opening of the exhibition illustrating the "Divina Commedia" in some forty to fifty large pictures, shown by artificial light—that "Galleria Dantesca" so ill-received in England—has been announced by the Chev. Gentilucci, the originator of the luckless speculation, in a long advertisement of the trumpet-flourish style, comprising a letter to and answer from the celebrated Listz (now an abbé), in reference to the performance of his grand *cantata*, known as the "Sinfonia Dantesca," which the public are promised with execution by 100 musicians, instrumental and vocal, for inaugurating the new campaign of the Dantesque Exhibition in Rome. We may ask whether the successes of one art, however brilliant, can be of the slightest avail towards securing those of another; and we put in our protest against the claim of this mediocre collection to represent at all worthily even the actual school of historic painting in Rome or elsewhere in Italy.

HERTFORDSHIRE TREASURES FOR THE KENSINGTON PORTRAIT EXHIBITION OF 1866.

THE truly noble translator of "Homer," the Earl of Derby, has promised by letter (to which we have already directed attention), to be aiding, abetting, and assisting in the formation of the National Portrait Exhibition, to be opened at the South Kensington Museum in the fast-approaching spring of 1866.

The treasures of Knowsley, in Stanley and other illustrious portraits, are to leave Lancashire on loan for the temporary Museum in Middlesex. Lord Derby's influence (and it is great) is freely tendered, and will turn to good account. Knowsley Hall and No. 36, St. James's-square, London, will be stripped, if needed, for the requirements and demands of the Exhibition,—nay, more, Oxford will be induced by its Chancellor to lend liberally from her Bodleian Gallery, her colleges, and her halls. Few, if any, will be found to say "No" to a request made for a public purpose by a nobleman so deservedly esteemed as is Edward Geoffrey Smith Stanley, Baron Stanley of Bickerstaffe, and Earl of Derby.

First of all let us name *what* the Lord-Lieutenant of Hertfordshire is to be asked for. Lord Derby must induce, persuade, or talk over the Earl of Verulam to let him have on loan the only genuine *picture* in existence of the great Lord Chancellor Bacon. It is a three-quarter piece, and by, it is said, Vansomer, though some judges differ; and some persons' "doubts" are of greater value than other people's "certainties." The viper-like eyes of Bacon are con-

spicuously characteristic in the portrait to be asked for. Then, failing Wilton or The Grove, we would like to take (*convey*, the wise it call) to Kensington for the season of 1866 the famous son of "Sidney's sister," William Herbert, Earl of Pembroke, the elder and abler of the two noble brothers to whom the first edition of Shakspeare's Plays is dedicated by the Players. His lordship might be talked over, or teazed into lending the full-length of Sir Nicholas Bacon—painter, sculptor, &c.—by himself. He was half-brother to the Chancellor, and *possibly* or *probably* the sculptor of the celebrated *sic sedebat* statue that marks and protects the grave of Bacon. Getting this, we would be emboldened into asking for other temporary loans: we should coax to be allowed to carry to Kensington (using Mr. Samuel Redgrave's most persuasive manner of speaking), the unique full-length of Frances Howard (of Overbury fame), Countess of Essex and Countess of Somerset. Then we would solicit to obtain for a London-season loan (gaining or failing our request), the fine Vandyck full-length of Lord Treasurer Portland (it is better, we agree with Waagen,* than the Gorhambury picture); and the finest portrait we have, and his lordship has the luck to possess, of Catherine of Braganza, Queen of Charles II., as St. Catherine. Courage renewed, we would hint a wish to have, to be taken every care of, the Lodge-engraved portrait of Heneage Finch, Earl of Nottingham and Lord High Chancellor,—the most illustrious of all the "black, funereal Finches;" modestly concluding our "askings" with a request for the loan of Will. Chiffinch of the Bedchamber to the King, known to every reader of "De Grammont," and of Sir Walter Scott's "Peveril of the Peak."

Well pleased with what we had done at Chancellor-shaded Gorhambury, we should drive to "The Grove," in time to catch Lord Clarendon at home; sadly missing the advantages we enjoyed on a former occasion of having the late Sir George Cornewall Lewis and the late Lady Theresa Lewis for our well-informed guides.

"Beggars must not be choosers," says the proverb; but, armed in a good cause, and backed by Lord Derby's all-influential name, we will ask boldly and largely. "Lord Chancellor Clarendon would have lent," we reason with ourselves as we hurry "Jehu-like" along, and "Secretary Lord Clarendon will lend."

His lordship is "at home," and,—

"Happy to catch him *not* at dinner-time,"—

will "see and receive." We have a baker's dozen of requests, and gain (in a dream), after a little hesitation, what we wish.

First of all, we ask with boldness for the large and magnificent picture of "The Derby Family," James Stanley, seventh Earl of Derby, his countess and child, to our thinking (and we have long studied Vandyck) the finest Vandyck in the world. It is little known, far less known of course than the Windsor and Petworth Vandycks, and well merits to be better known. Imagine the flush of delight that reddens the face of the asker when the request is at once complied with. What would the Earl of Derby give for this noble picture?—but Lord Clarendon cannot, would not, part with it, though Knowsley is its proper home, not "The Grove."

With a becoming modesty we cannot gain confidence to ask for another Vandyck or two from "The Grove," though sorely tempted. Our requests at Lord Clarendon's hands are therefore confined to the head of Fletcher the dramatist (Beaumont's associate); to the half-length of the far-famed Lucius Cary Viscount Falkland; to Sir John Mennes, the wit; and to the Sir Peter Lely (to the knees) of the great Lord Chancellor Clarendon. These, indeed, would be and will be additions of moment to the coming exhibition of 1866.

From "The Grove" it is a pleasant walk to the adjoining estate or park of "Cassiobury," the Hertfordshire seat of the Earl of Essex. Here Mr. Samuel Redgrave must come and secure the very noble full-length by Vandyck of Algernon Percy, Earl of Northumberland; the very curious portrait (head-size) of King Henry IV., once at Hampton Court, in Herefordshire, and some half-dozen more prizes, with foremost among the number, Prior, and Pope, and Gay, and Horace Walpole's Kitty Hyde, Duchess of Queensbury, in blue, with a lamb, and deliciously charming, though Charles Jervas was the painter. It was a picture that deservedly attracted attention in the British Portrait Gallery of the Art-Treasures Exhibition at Manchester, in 1857.

Of houses in Hertfordshire famous for pictures, Professor Waagen, the deservedly-esteemed director of the Berlin Gallery, has seen only *two* out of eight or nine. He describes Panshanger (Earl Cowper's) and "The Grove" (Lord Clarendon's); but his *four* large volumes are wanting in visits to Hatfield (the Marquis of Salisbury's), to Gorhambury (the Earl of Verulam's), to Cassiobury (the Earl of Essex's), to Bayfordbury (Mr. Baker's), to Ashridge (Lady Maria Alford's), and to Brocket, the Hertfordshire seat of Prime Minister Lord Melbourne and Prime Minister the late Lord Palmerston. Hatfield House is full of rare and valuable portraits of Queen Elizabeth and the Cecils of *four* peerages—Burleigh, Salisbury, Exeter, and Wimbledon; while Bayfordbury, with its Kit-Kat Club portraits and its Dryden, with the laurel-wreath in his hand, by Kneller, is rich without a rival.

And having said thus much by way of Hertfordshire's wealth in English portraiture, I will conclude with a story.

In a wild belief that the coming Kensington Exhibition will contain, at least, one portrait of Field-Marshal the Duke of Wellington, I will here express a hope that the Sir Thomas Lawrence Waterloo portrait of "The Duke," painted (1825) for the Minister Sir Robert Peel, may be one of them. I derive my anecdote from my friend (for such he was pleased to look upon me) the late Right Hon. John Wilson Croker, whose sought-out and acknowledged assistant I was in his last edition of "Boswell's Life of Johnson," and with whom I wrought for years in the long-announced, and still looked-for, edition of the works of Pope.

Here is my memorandum:—

"April, 1853. West Molesey.—Mr. Croker told me that Sir Thomas Lawrence's noble full-length Peel portrait of the Duke of Wellington, so finely engraved by Cousins, represented originally the Duke with his watch in his hand, as if waiting at Waterloo for Blucher to come up. 'I had no watch in my hand!' (exclaimed the Iron Duke somewhat angrily), 'it was something else with me than—time.' The watch was changed to a telescope. The picture is in Staffordshire, at Drayton Manor."

Another shire in another communication.

Peter Cunningham.

* Waagen, ii. 458, ed. 1854.

ARCHITECTURE IN LIVERPOOL.

It has been observed by thinking minds that architecture, of all the arts, is the one most intimately interwoven with our deepest and most cherished thoughts, habits, and feelings. While it is the oldest it is at the same time the most comprehensive, the grandest, and, in proper hands, should be the most plastic and impressive. Unlike painting and sculpture, it is not in its origin an imitative art; and when we are recommended to study nature, it is with the object not of copying her, for then, unless in the decorative portions, nought could be acquired that would in any way assist us. Through the whole range of the arts, whether it be painting, music, poetry, or architecture, there exist certain leading constructive principles analogous to those upon which the beauties of nature depend for their influence upon the human mind. It is to an instinctive perception and close study of these principles, only fully appreciated and felt by those practised in the arts, that all successful art-work owes its most elevating and refining influences,—not that any code of rules can be laid down for our guidance; art is far too intangible for that, and anything in the form of canons of taste only defeat the object for which they are framed. The highest art is the product of a finely-organised creative mind, guided by an educated and refined taste,—a correct taste, more especially in architecture, in which we cannot apply to nature direct for instruction, is the result, if we may so express it, of a continual *testing* of the emotions; it is a tentative refining process, by which all the solid gold is extracted, and the dross and baser metal rejected. The mind must be continually on the alert, and so infinite is art that a whole lifetime may be, and is by great artists, profitably expended, not alone in creating but in assimilating, and rejecting, and holding fast to and embodying that which is good. The creative faculties are those that supply from the mind's store the materials and fashion them into form; the directing taste may be likened unto the delicate touch by which all the harshnesses are detected and softened down. Nature is full of analogies, and so sensitive and certain do the operations of the mind become, that what at first, when the faculties are in a coarser and duller condition, may afford pleasure, with the more educated organisation—the result of combined observation, reasons and associations—will probably be found to be, if not utterly bad, still in the nature of a jarring discord.

To those who, perhaps, possessing some sympathy with art, have neglected to educate their taste, and are not fully alive to the advantages of refined culture, it may appear to be a foolish business to render the skin so thin, the optics so sensitive, that the usual surroundings are likely to create more of pain than pleasure. This is what may be called the *comfortable* doctrine. Let us remain as we are. Such a thing may not be in the highest art, it may not be of an elevating nature, it may be crude and ill digested; but it answers the great end of all things, *it pleases me*. But, my dear friend, though it pleases you, though it may be called handsome or pretty, it might, at no more expense, be made capable of fulfilling a far higher function. Let us illustrate it from your own business, and the common relations of life. Is there not such a thing as integrity, honour, honesty? Do you not pride yourself on your word being as good as your bond? Is not acting in a gentlemanly manner usually considered *the thing?* These are homely comparisons, but none the less to the point. Now try and abstract your mind, and look at the governing principle, and say if such a code of morality does not recognise something loftier than self-interest, and a human sympathy wider than personal pleasure? So it is with art. *Art is for all;* and one of its grandest characteristics is that, while affording pleasure in its production, its influence is not confined exclusively to the gratification of the possessor, but it sheds a beneficent lustre upon all within its compass, and by so much as it takes a man from the base and greedy objects of life, so much does it raise him above the level of the beasts of the field; and, in the rather hackneyed words of the poet, which have been brought into disrepute by the penny-a-liner, "a thing of beauty is a joy for ever." So far introductory.

It would be impossible to properly understand or appreciate the architecture of Liverpool without taking into consideration the influences which have moulded it into its present shape. The ideas of the preceding age strongly affect the character of the times we live in, and in architecture as much, if not more,—in Liverpool at all events,—is due to such a transmission of habits of thought. With examples constantly before their eyes, and living recipients of the ancient lore practising most extensively on all hands, it would be strange, indeed, if the town could rid itself entirely of the baneful effects of the architectural perpetrations of what is now called *the dark ages of art*. The strong conservative tendencies of the town, combined with the indiscriminate employment of rapidly-increasing wealth, have placed it in its present unsatisfactory position; and if we can lead to the demand for a higher style of art, and an honester, fresher, purer character of decoration, and more tasteful distribution of ornament, our aim and object will have been attained.

With the exception of the Town-hall and Old Exchange, the public buildings of Liverpool, up to the period of St. George's Hall, owe their character to what many call the *genius* (?) of Mr. John Foster. As was pertinently observed by a witty native artist, art in Liverpool was, at that period, too much *fostered*. How Foster attained the reputation he did, is a thing we could never fathom, excepting it arose from the petting and cherishing of a rich corporation. His was an age of town dues and other comfortable monopolies, liberally expended in sustaining other monopolies. It was said, we know not with what truth, that Rickman, the systematizer, classifyer, and analyzer of Gothic architecture, in despair of obtaining work in the face of Foster the Magnificent, had to leave the town. So it is with all art-talent in Liverpool. We can retain few things but "hard hitters," "merchant princes," "damaged and shoddy men," "measurers," "valuers," and "builders,"—all very worthy and useful in their way; but, with the exception of a few of the "princes," of decidedly unartistic tendencies: a dulness of apprehension, optically considered, seems to pervade

the place. An atmosphere of mental morphia floats over everything; and so stupified have we become by contemplating the grandeur of Foster, that since his date, having attained perfection, we have quietly gone to sleep over it. But rouse ye, rouse ye! The dormant life in the artistic winter of our existence will soon, we hope, give place to the genial warmth and all-pervading sunlight of a happier summer, when those who have been overcome will stretch their legs, yawn, rub their eyes, and give other well-known signs of a return to consciousness.

One of the great advantages possessed by Foster, in addition to his local influence, was the halo shed over him by his travels and studies along with Cockerell in Greece. But how differently each used his opportunity! In Cockerell's work there is a lasting pleasure in the perfection and refinement of the details; and though he fails somewhat, at times, in breadth of effect—though sometimes guilty of grave errors of taste—though in the carving he is specially ineffective—even an ordinary observer cannot help feeling impressed with the conviction that his work is that of an educated mind—that he is master of his subject, and that failure, if there be any, cannot have occurred from a slovenly slurring over, or artistic fudging of the subject. Every moulding bears the stamp of careful study; while, on the contrary, Foster, it is well known, was of that indolent disposition which cannot abide the drudgery of work. If we examine either the Branch Bank of England, in Castle-street, or the Liverpool and London Chambers, by the Exchange, it will not require much penetration to discover that Cockerell had constantly before him the problem of adapting the antique form to the exigences of modern wants, and that in the process he has discovered some decided originality of treatment. Though drawing his inspiration from the same source, Foster, whose mind was of another and less thoughtful stamp, shows a wonderfully leaden dulness and want of imagination. Doubtless some discount must be taken off our censure to the credit of the baneful influences that then overspread the whole country, and from which it would, perhaps, have been difficult for him to have entirely detached himself; but we cannot rest while his lineal descendants, mentally speaking, but lacking even his force of character, go about cracking up and flourishing him in the faces of the "youthful members of the profession." The versatility of humbug is truly wonderful, for while the last phrase conveys the idea of a lofty condescension—a stooping down of patronage—the praise of Foster is usually qualified by a few touching words of pity for the ignorant influences which must have affected him. Foster was a wonderful man, *considering*; but we live in a more enlightened age. He was very good, *in his way*; but *us*, his successors, he could not be expected to equal, for has not the cloud dissolved from our vision? and do we not *now* see things in their real light? This is the homily we are continually doomed to hear, and is very characteristic of the style of mind we have to put up with. Such remarks are clever, in their limited way; for, do you not see, two birds are killed with one stone—and while apparently praising others we are continually chanting hymns to our own glorification? A little freedom from affectation—a few words betraying a genuine sympathy with architecture *for itself*, would do more for the tasteful adornment of the town than the whole gigantic labours of the Architectural Society, and the bandying about of compliments which regularly accompany them. We may be considered harsh, but we feel strongly and deeply that in Liverpool such genuine sympathy is as rare as strawberries at Christmas.

LIVERPOOL.

REFRIGERATION OF BUILDINGS.

M. CHARLES TELLIER, inventor of the ammonia ice-producing machine, and the ammonia engine as a motive power, has proposed an apparatus for the refrigeration of public buildings or crowded saloons, theatres, &c. General Morin in a note communicated to the Academy of Sciences, proposed four methods towards cooling the air in the interior of buildings;—first, the cooling of the air by means of pulverized water or spray; second, by the contact with refrigerated surfaces; third, by a supply of external air, cooled down as well as possible; fourth, by the constant watering of the roofs. The last plan seems to be the favourite with the General. He moreover stated that by experiments made at the Conservatoire des Arts et Métiers, it requires 1 kilogram of ice to cool a cubic mètre of air, an astonishing waste, when we consider the slight amount of refrigeration required for practical application.

M. Tellier's plan is based upon another principle, viz., that in a vacuum vapours are produced instantaneously and in direct proportion to their previous condensation. Thus, if the condensation be powerful, the vaporisation will be energetic also; and as the vaporisation cannot take place except under the strict condition of the absorption of caloric, if a machine be so disposed that the air to be cooled pass through it, the quantity of heat abstracted from the air will be proportional to the said vaporisation.

By applying ammonia, a variation of 10° centigrade only, between the temperature of vaporisation and condensation, will produce a difference of more than two atmospheres in the pressures corresponding to each temperature. In fact, the energy with which the heat is transported by these vapours may be compared to the force developed by the escape of steam into the open air from a steam boiler, under a pressure of three atmospheres.

The apparatus consists of a cylinder, completely closed, and filled with ammonia liquified under pressure. It is traversed by a series of tubes similar to those of a locomotive boiler, through which the air to be cooled is made to pass. The cylinder communicates by means of a pipe with a coil tube, or condenser, placed in a vessel of water maintained at 10° centigrade. The operation is as follows:—The air entering through the tubes parts with its caloric, which is absorbed by the ammonia in the cylinder. The ammoniacal gas formed passes into the coil tube, is there condensed, and returns, through another pipe, to the cylinder, either by a natural fall or flow, or by aid of a pump. The effect is very simple, and the loss of heat through radiation but little, if care be taken to surround the cylinder with a non-conducting substance, such as felt, flannel, &c.

NEW EYE AND EAR INFIRMARY, BRADFORD, YORKSHIRE.

THIS building being one of the first ever erected in the county for the special treatment of diseases of the eye and ear, considerable care was necessary in its arrangements, so as to obtain the accommodation required in the most suitable manner, and to facilitate as much as possible the economical working of the institution. On the ground-plan is an entrance vestibule opening through glass screen doors into a spacious hall, 30 ft. by 20 ft. This entrance is for residents, visitors, and the medical officers, and is a central feature in the front.

On the left are placed the rooms devoted to outdoor or non-resident patients and the dispensary. The outdoor patients enter by a covered porch, on the west side of the building, into a waiting-room, 34 ft. by 20 ft., communicating with the consultation-room to the front, 27 ft. by 20 ft., and in connexion with which is the ophthalmoscopic-room, also lavatory, cloak-rooms, and every convenience. After consultation the patients pass into the dispensary waiting-room, and thence from the building by a separate doorway. This dispensing and consultation are thus conducted without confusion, and also without entering into that portion of the institution devoted to residents. On the left of the hall are placed, to the front, the convalescents' ward, 35 ft. by 20 ft.; and at the back the kitchen, scullery, &c., with a distinct entrance for the servants. Lifts are provided, for coals and food, from the basement and kitchen to the first-floor. The principal staircase opens out of the entrance-hall, leading to a landing on the first-floor, 30 ft. by 20 ft. The nurses' rooms are placed in the centre of this floor, and upon each side, and completely separated, are the male and female wards;—two large wards, 35 ft. long, and 20 ft. wide, to the front, and two smaller wards, 25 ft. long and 16 ft. wide, to the back. Bath and store rooms are also provided. At the back of the building is placed the operating-room, lighted from the north and with large top-light, surrounded with deafened walls and doors. Accommodation is given upon this floor for thirty resident patients. The rooms are lofty, and the windows arranged with hanging shutters, so that the light can be regulated in any part of each room or altogether excluded.

Both on the second and first floor, the corridors, hall, and passages are heated with hot water, and the rooms by open fireplaces. On the basement are placed the coal-cellars, pantries, and larders; and there is also a large washhouse, vaulted in brick, and with a separate outside entrance.

The exterior is executed with cut wall-stones, and ashlar bands and dressings of light-coloured stone.

The hospital had its origin in a private clinical institution of Dr. E. Bronner, of this town. Subscriptions were obtained; the foundation-stone was laid on the 29th of March, 1864; and the hospital inaugurated on the 30th of June last, by the mayor of Bradford, Mr. Charles Lemon, with the gratifying announcement that the cost of land, building, and furnishing, amounting to about 6,000*l.*, was entirely covered by voluntary donations.

The building has been erected from the designs, and under the superintendence of Messrs. Lockwood & Mawson, architects.

THE ROAD TO THE THAMES EMBANKMENT.

THE road to the Thames Embankment proposed to be formed by the Board of Works over the site of Northumberland House would be a step towards realizing a scheme proposed in our pages some years ago for connecting the district on the other side of the river with the Strand and West-end generally by means of a very wide bridge from that point. We shall greatly regret the loss of Northumberland House as an interesting relic of Elizabethan London. The London of the past is fast disappearing. It cannot be helped; new wants must be supplied; fresh facilities to moving millions must be afforded, but we may nevertheless grieve, and moreover, should examine carefully whether or not equal improvements may not be effected without destruction. An extensive crescent is spoken of stretching from Hungerford to Waterloo Bridge. Adelphi-terrace would have to come down, and much property adjacent.

PROVINCIAL NEWS.

Leeds.—Four carved stone lions are to be placed on pedestals in front of the Town-hall, which at present has a naked and unfinished appearance. The corporation has granted a sum of 600*l.* for the purpose.——The new building for Messrs. Beckett's bank will form one of the architectural ornaments of Park-row, and will be furnished in the Gothic style: the work has been entrusted to Messrs. Marsh & Jones, late Kendell & Co., of this town.

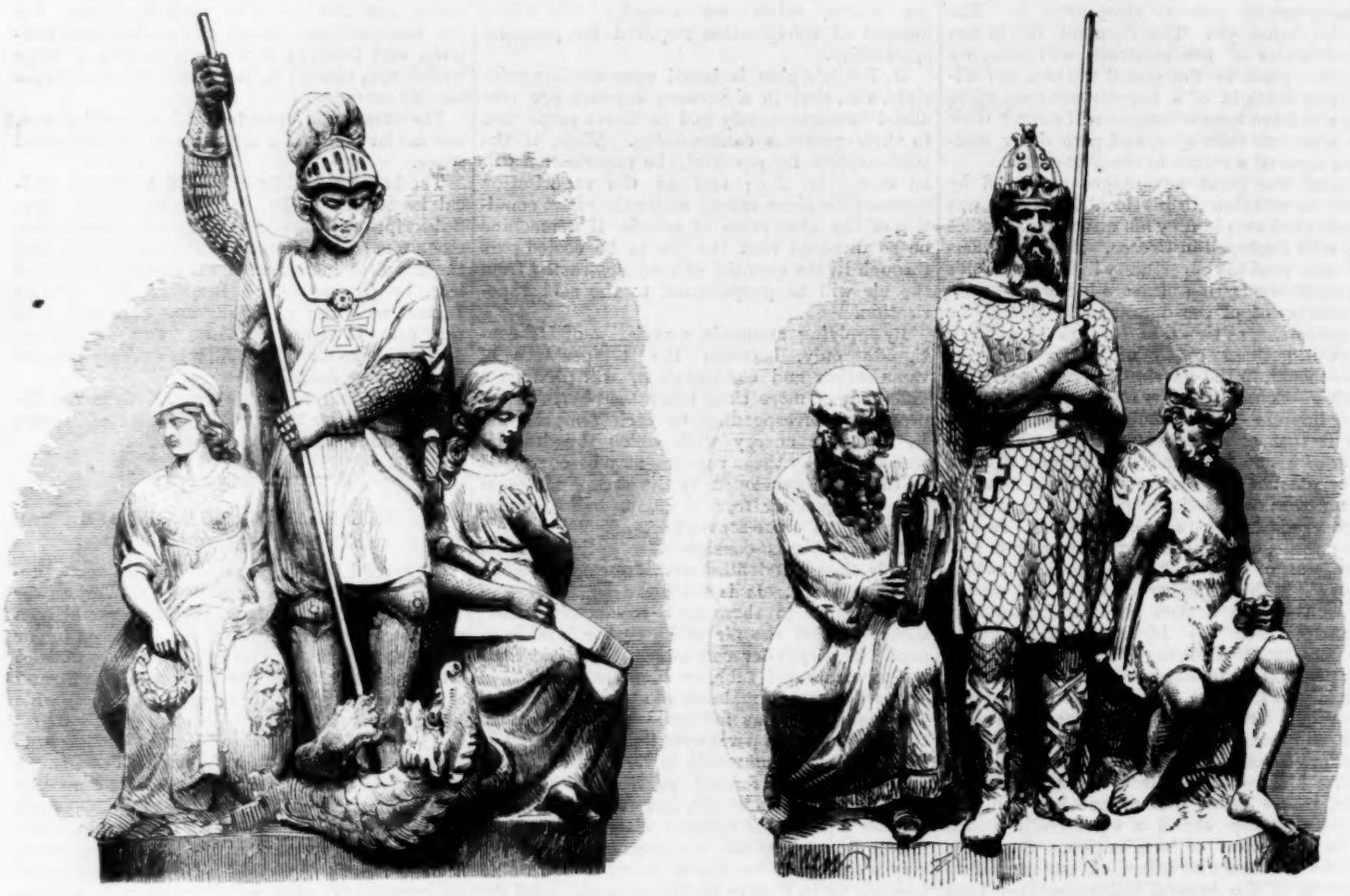
Wakefield.—The foundation-stone of a very extensive glass-bottle manufactory has been laid here.

Bradford.—Some of the oldest parts of old Bradford are fast disappearing. Workmen have been demolishing the buildings which adjoined and covered the Old Foundry ground, and including the ancient residence of a notable inhabitant some thirty or forty years ago, "Parson Atkinson." The continuation of Market-street will intersect the site. Similar demolition has for some time been going on on one side of Westgate, on the Bee-Hive Inn estate, for the purpose of carrying a street thence into Thornton-road, and also in Well-street and at the bottom of Lower Cheapside. The re-arrangement of Bradford streets has long been needed.

Doncaster.—The town council have resolved "That a wing be built at the south end of the market, uniform with the one at north end; and that the proposed new corn-market building be erected in the centre." The resolution, in fact, is that the improvements should be in accordance with the original design of the markets; upon a plan Mr. Butterfield has already submitted to the council. It was also resolved,—"That the council invite competition for the best design for an extension of the markets; and that in addition to a corn exchange and a new wing of the market-house, such improvements shall comprise covered vegetable and fruit markets, and a public slaughter-house; also that a first prize of 100*l.* and a second of 50*l.* be offered for such plans as the council may select."

Rotherham.—It has been resolved to erect a people's hall for Rotherham, Masbro', and the district thereabout.

NATIONAL PROVINCIAL BANK OF ENGLAND.



Sculptured Groups surmounting the Front.

INDUSTRIAL EXHIBITIONS.

The South-Eastern.—This Exhibition, which was opened by Viscount Sydney, at the Dining-hall, Greenwich Hospital, has been highly successful, the official returns proving that in seven weeks upwards of 70,000 visitors have been admitted.

The Birmingham Exhibition.—The surplus of this Exhibition is now, to some extent, defined. The total sum received was 4,126*l.* 7*s.* 8*d.* The expenditure had been 3,055*l.* 9*s.* 3*d.*, so that there was a balance on the right side of 1,070*l.* 18*s.* 5*d.* As 300*l.* had been voted to the hospitals, there remained a sum of 770*l.* 18*s.* 5*d.* to be disposed of. What was to be the destination of this money did not transpire.

The Glasgow Exhibition.—This Exhibition was, on Tuesday in last week, formally opened by the Duke of Argyll. The Exhibition has been got up under the auspices of the Central Working Men's Club. It is held in the Macintyre Buildings, Argyle-street. The interior may be described as a large hall, having three spacious galleries, one above the other, running round the walls. The Exhibition in its general features is similar to those that have lately been so frequent in England. The number of articles exhibited by working people is nearly 1,200, and there are upwards of 400 exhibitors belonging to the purely industrial classes of the Glasgow population. The address was postponed till the evening, that working men should hear it. The duke, in the course of his remarks, said:—"I am told that out of 500 total exhibitors, there are upwards of 400 who belong to the working classes. Now, I need hardly say that in some points of view it may be said that the whole Exhibition has come from the hands of working men. I could not help being struck by the large comparative development which is given in the Exhibition to two great branches of human inquiry. The first is natural science, and the second is those abstract sciences which are applied principally to mechanical invention. Those I think are undoubtedly more fully represented than any other things in the Exhibition, and I can understand how these two great departments of inquiry should have had special attractions for the working men. As regards the natural sciences, I think it is impossible not to feel that in the hurry and bustle of our daily life it is an immense refreshment to have our minds brought face to face with the light of nature. In the main the face of nature is a face of happiness and of peace. And I conceive that Wordsworth has really touched in a single line upon the real secret of the power which is exerted over us by the natural sciences, when he has referred to nature as

'Abodes in which self-disturbance hath no part.'

But then, gentlemen, with regard to the other great department, which is so well—I might say so magnificently, as it is—exhibited, I mean the department of mechanical invention—that also is one of the greatest and most fruitful departments of natural inquiry. Why, the world is one great storehouse of mechanical invention. Our very bodies—these frames, of which it is said they are fearfully and wonderfully made—they are specimens of supreme mechanical invention. And I think that the study of mechanical invention has a great charm in this respect also, that it gives us an immense sense of power, and yet a sense of power which, in my opinion, can never tend to pride; but should always be, and very generally is, connected with true humility of mind; because we feel on the one hand the inexorable natural laws which we have to deal with—we feel, on the other hand, that by skill, by steady and by careful fitting of means to ends, we can make those very laws, apparently so involved and so inexorable, the subtle instruments of our own purposes and of our own intentions."

The Dublin Exhibition.—Although this exhibition of manufacturing industry was not explicitly called an Industrial Exhibition, it was so essentially; and we may here note that at a special meeting of the Royal Dublin Society held in Dublin, for the purpose of considering the report of council relative to the deficit for which the guarantors of the Exhibition were held responsible, the report, which set forth resolutions adopted at a meeting of the guarantors, in which they offered the society the sum of 1,000*l.*, in addition to the buildings erected for exhibition purposes in the Shelbourne-yard, in lieu of all claims against the guarantors, was adopted. The council recommended the "acceptance from the guarantors of a sum of not less than 1,000*l.*, within three months, provided the balance remaining due be collected by them within the same period, and that the sale of the buildings in Shelbourne-yard, &c., be postponed until the result of said subscription be ascertained; but without prejudice, nevertheless, to the legal rights secured to the Royal Dublin Society by the guarantee deed."

THE MAIN DRAINAGE OF LONDON.

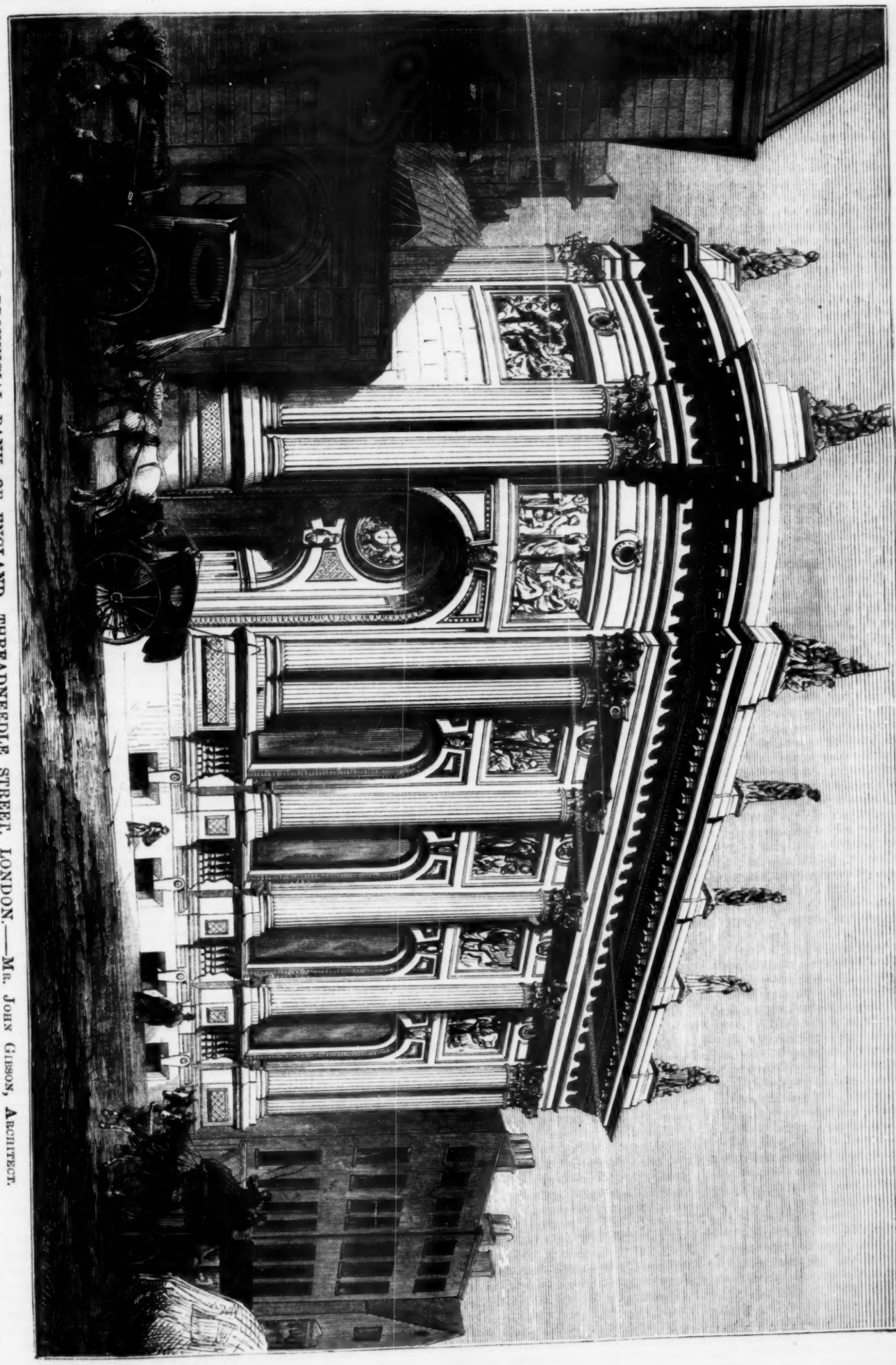
On Saturday in last week, the members of the Metropolitan Board of Works, headed by Sir John Thwaites, paid a visit to the Plaistow Marshes, for the purpose of laying the foundation stone of the Abbey Mills pumping station—a building which is to rival the works at Crossness, and in which will be the means of raising the sewage of the Low-level to the great High and Middle-level Sewers.

On arriving at the ground, the party immediately descended some 40 ft. below the surface, and 12 feet below the bed of the River Lea. The company passed through some of the completed sewer, which, in its length of five miles from the Tower, has to go under two branches of the Lea, and under the river itself. The subterranean passage, which is about 12 ft. high, was brilliantly lighted, and led to the site of the station.

Mr. Bazalgette, the engineer, read a statement, which was engrossed for insertion in the stone, showing that the sewer, of which this was the mouth, would drain 25½ square miles, and would have to raise about 5,000,000 cubic ft. of sewage a day, and that the engine power, about 1,140-horse, was provided for the raising of 15,000 cubic feet per minute, so that all storm rains could be safely carried off.

Mr. Freeman laid the stone, making an interesting address.

The works are being carried out by Mr. Webster as contractor, under Mr. Edmund Cooper, resident engineer.



NATIONAL PROVINCIAL BANK OF ENGLAND, THREADNEEDLE STREET, LONDON.—MR. JOHN GIBSON, ARCHITECT.

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A HORIZONTAL SMOKE VOMITORIUM.

WE have received a communication from Dr. D. O. Edwards, of which we print sufficient to explain his views:—

"The ascent of the nascent gases arising from combustion may be impeded by two different causes. First, in a still and humid state of the atmosphere, chimneys are filled with a body of air very nearly saturated with vapour, and, consequently, so conditioned as to resist, instead of aiding, the first feeble pressure of the rising smoke or heated gases. This hinderance, however, is only temporary. It can only exist during a perfect atmospheric calm; and is easily overcome by the intrusion into the shaft of an ignited torch.

The most frequent and pertinacious impediment to the easy escape of smoke consists, secondly, in the disturbing effects of air currents upon the chimney finials, which are generally terra-cotta pots, or contorted zinc tubes. It is a law in pneumatics, the necessary consequence of the universal force of gravitation, that large and strong currents of air overrule and attract to themselves all minor breezes. The impulse of wind is simply its local weight, but a degree of rarefaction is produced on the edge of every current, which causes an influx of the adjacent quiet air. A strong gust or heavy torrent of wind approaching an ordinary stack of chimneys, of course displaces the lighter atmosphere round about, and, descending into the flue, drives down the ascending smoke.

When undisturbed by such moving columns of air, the tranquil atmosphere permits the ascent of smoke or rarer air, which obeys the law of gravitation as implicitly as all floating bodies on the surface of water. It is by the lateral pressure of the colder air that the heated products of combustion are made to shoot upwards to the sky.

In order that the column of smoke should disembogue itself freely from its channel of escape, the chimney, it is necessary to prevent the approach to, or rude contact of the wind with, the immediate vent of the flue; and this result is perfectly secured by the subdivision of the current into minute rills of air, which tranquilly commingles with the lighter reservoir of atmosphere retained in and around the chimney-pot or other finial.

To prove that the safe issue of the smoke may be thus effected, I have constructed a simple apparatus, consisting of six moderator lamps placed in a row, and having their chimney-glasses terminating in an iron tube or oblong chamber, the calibre of which must be four times as large as the sum of that of all the lamp-chimneys. The top of each glass projects to the height of a few lines into the interior of this receptacle, which I have named the "vomitorium." Each end of the vomitorium is obturated by a perforated door, of which the apertures are of such a diameter as will suffice to permit the free exit of the products of combustion and yet annihilate the disturbing atmospheric current. My little contrivance shows the practicability of this double effect.

The tube or "vomitorium" should be closed at each extremity by a kind of honey-comb door, which permits the smoke freely to escape through the upper apertures, and admits the outer air to enter in driblets and course quietly along the floor of the tube. All jets and draughts being minutely subdivided in this way, no force disturbs the separation of the hot current from the cold, which currents move steadily in contrary directions, and are totally unaffected by any aërial movements outside of the vomitorium.

In the hands of the architect this vomitorium would take the form of an arcaded substitute for the prevalent stack of chimneys. This arcade would extend from the front to the back parapet of the building, and into it each flue should open, protected by a collar or rim a few inches in depth. Each end of the arcade or tunnel should be closed, upon the principle already explained; and as this perforated or partially-shut aperture of the air sewer at each extremity would open on opposite aspects of the house, the air within would be always in motion, and the state of chimney arising, as described, from stagnant moist air, would be prevented.

A careful observation shows us that the aërial phenomena exhibited in my apparatus occur as follows:—The jet of smoke issuing into the vomitorium rises to its roof, and gradually flows outwards through the outlets provided; the external air enters through the inferior holes and moves inwards along the floor of the tube, thus keeping up the atmospheric equilibrium; and the combustion of the fuel is maintained in perfect regularity. Two further disadvantages may be obviated by the adoption of this invention; it will be no longer necessary to raise low chimneys to the level of lofty ones, as the vomitorium is effective at all heights; and a portion of the great percentage of heat now lost might be saved by inserting vomitoria between the floors of houses instead of at the top, and thus warming by radiation some portions of the building.

The sure expulsion of the products of combustion is one important means of ventilation, but not the only one; it is equally important to find an *aditum* for fresh air as an *exitum* for impure vapours. It is necessary, however, that this supply of oxygen should be so introduced as not to lower the temperature of apartments too much."

We should expect a rapid accumulation of soot in such an arrangement, and a considerable liability to the passage of smoke from one flue down another. When we have seen it in operation we shall be better able to judge.

THE STRENGTH OF PORTLAND CEMENT.

AT the Institution of Civil Engineers, December 12th, Mr. M'Clean, president, in the chair, the paper read was on "Experiments on the Strength of Cement, chiefly in reference to the Portland Cement used in the Southern Main Drainage Works," by Mr. John Grant.

This communication related to an extensive series of experiments, the results of which were recorded in voluminous tables forming an appendix to the paper, carried on during the last seven years, with a view to insure, as far as possible, that only cement and other materials of the best quality should be employed in the Southern Main Drainage Works, of which the author had charge as resident engineer.

As a preliminary step, samples of Portland cement were obtained from all the principal manufacturers for the purpose of experiment. The average weight of these samples was found to be 108·6 lb. per bushel, and they sustained breaking or tensile strains, at the end of a month varying from 75 lb. to 719 lb. upon 2¼ square inches. A clause was then inserted in the specifications to the effect that the Portland cement to be used in the works should be of the very best quality and ground extremely fine, weighing not less than 110 lb. to the striked bushel, and capable of resisting a breaking weight of 400 lb. upon an area 1½ inch square, equal to 2¼ square inches, seven days after being made, and after being immersed in water for the whole of that time. The standard was subsequently raised to 500 lb. on the same sectional area, which was that used throughout the experiments. During the last six years 70,000 tons of Portland cement had been used in these works, which extended over a length of 18 miles and had cost 1,250,000*l*. This quantity of cement had been submitted to about 15,000 tests, at a cost of only 1¼d. per ton. The machine devised for showing the tensile strain was a lever balance, constructed by Mr. P. Adie, and its first cost was from 40*l*. to 50*l*. It was so simple that an ordinary workman could be trusted to test the cement, and the cost for labour did not exceed 80*l*. per annum for each machine.

The manufacture of Portland cement required extreme care in the admixture of its two simple and well-known ingredients, clay and chalk; it being necessary to vary the proportions according to the quality of the chalk; thus, in white chalk districts, the clay formed from 25 to 30 per cent., and in grey chalk districts from 16 to 20 per cent. of the whole bulk. The manufacture was carried on almost exclusively on the banks of the Rivers Thames and Medway; the clay, which should be as free from sand as possible, being obtained from the creeks and bays between Sheerness and Chatham. Long experience now enabled the clerks of the works and others to detect the qualities of the cements by colour and by weight. Very strong Portland cement was heavy, of a blue grey colour, and set slowly; in fact, the longer it was in setting, the greater was its strength. Quick-setting cement had generally too large a proportion of clay in its composition, was brown in colour, and turned out weak, if not useless. In the first schedule of prices 2s. 3d. per bushel was inserted; but this was far above its present market value.

But the tests were not alone sufficient. It was essential that constant supervision should be exercised to insure that only clean and sharp sand should be mixed with the cement; that the cement was only supplied with sufficient water to reduce it to a state of paste, which was best accomplished by means of a perforated nozzle at the end of a pipe or watering-can; that the bricks or stones were thoroughly saturated with water, so that in setting the cement might not be robbed by absorption of the moisture necessary for its perfect hardening; and that a current of water was prevented from passing over the cement, or through the joints, during the process of setting, as this would wash away the soluble silicates.

The results as a rule were the average of ten tests, the samples being immersed under water from the time of setting to the time of testing. The tables show that, during the last six years, 1,369,210 bushels of Portland cement had been submitted to 11,587 tests, and that the cement was found to be of the average weight of 114·5 lb. per bushel, and to possess an average tensile strength of 608·6 lb. upon 2¼ square inches, being 51½ and 21 per cent. in excess of the two specified standards. It was also ascertained that, provided Portland cement be kept free from moisture, it did not, like Roman cement, lose its strength by being kept in casks or in sacks, but rather improved by age,—a great advantage in the case of cement which had to be exported. Experiments, conducted over periods varying from one week to twelve months, with Portland cement weighing 112 lb. to the imperial bushel, gauged neat and mixed with varying proportions of different kinds of sand, showed that neat cement was stronger than any admixture of it with sand; that mixed with an equal quantity of sand (as had been the case throughout the Southern Main Drainage Works), the cement might be said to be, at the end of a year, approximately three-fourths of the strength of neat cement; that, with two, three, four, and five parts of sand to one of cement, the strength was respectively one-half, one-third, one-fourth, and about one-sixth that of neat cement. Other experiments showed that, at the end of twelve months, neat cement kept under water in a quiescent state was about one-third stronger than that which was out of water, both indoors and exposed out of doors to the action of the weather; that blocks of brickwork, or concrete, made with Portland cement, if kept under water until required for use, would be much stronger than if allowed to remain dry; and that salt water was as good for mixing with Portland cement as fresh water. Bricks of neat Portland cement, after being made three, six, and nine months, withstood a crushing force of 65, 92, and 102 tons respectively, or equal to the best quality of Staffordshire blue bricks; and bricks of cement, mixed with four and five parts of sand, bore a pressure equal to the best picked stock bricks; while Portland stone of similar size bore on its bed a crushing weight of 47 tons, and against its bed somewhat less; and Bramley Fall stone sustained on its bed 93½ tons, and against its bed 54½ tons. Portland cement concrete made in the proportions of one of cement to six or eight of ballast, had been extensively used for the foundations of the river wall and the piers of the reservoirs at Crossness, as well as for the foundations generally both there and at Deptford, with the most perfect success. It was thought that it might be still more advantageously used as a substitute for brickwork or masonry, wherever skilled labour, stone, or bricks were scarce, and foundations had to be made with the least expenditure of time and money. Whenever concrete was used under water, care must be taken that the water was still, as a current, whether natural or caused by pumping, would carry away the cement and leave only clean ballast. Roman cement, though about two-thirds of the cost of Portland, was only about one-third its strength, and was, therefore, double the cost when measured by strength. It was, besides, very ill adapted for being mixed with sand.

In conclusion, the author, whilst recommending Portland cement as the best article of the kind that could be used by the engineer or architect, warned every one who was not prepared to take the trouble, or incur the trifling expense of testing, not to use it; as, if manufactured with improper proportions of its constituents, chalk and clay, or improperly burnt, it might do more mischief than the poorest lime. Further experiments were desirable, on the strength of adhesion between bricks and cement, under varying circumstances; on the limit to the increase of strength with age; on the rela-

tive strength of concrete made with various proportions of cement and ballast; and on the use of cement in very hot climates, where, probably, extra care would be required in preserving the cement from damp, and keeping it cool until the process of setting had been completed. On these and other important points, the author trusted that all who had the opportunity would record their observations, and present them to the Institution.

The general meeting was held on the 19th instant.

NEW METROPOLITAN TRAMWAYS.

A RENEWED endeavour will be made in Parliament to obtain powers to lay down improved tramways for omnibuses, also of a much-improved character. The top edge of the rail will be flush with the pavement, very narrow, and will present no obstruction to wheels; and those adapted to it can readily go off or on to it. The projected company will be bound to maintain a strip of the road 7 ft. in breadth for each line of rails, although no exclusive right to travel on these will be reserved. The company will be competitive with the General Omnibus Company; and no doubt this itself will constitute a strong recommendation to Londoners, who desire to supersede, by an English Company, the French association which at present overrides the citizens with their bad, draughty, omnibuses and their broken promises. If otherwise unobjectionable, tramways would promote the regulation of traffic, and obviate the necessity for demolishing some hundreds more houses by running railways through various parts of the metropolis.

A NOTE ON THE MANUFACTURE OF MARBLED PAPER.

ON one side of the area of Red Lion-yard, Clerkenwell, there are several workshops. One of these is occupied by Mr. F. Hitching, a manufacturer of marble, granite, and wainscot wall-papers. A look into it enables us to notice the process by which this kind of house and shop decoration is prepared. The premises in which this work is executed are of considerable extent, and present a very picturesque appearance. The space needed for drying the paper and for the various operations of staining prevents the overcrowding of the workpeople, who, for the most part, are youths, and very young boys.

On reaching one apartment there are to be noticed quantities of paper made of the usual width of wall-papers, and in pieces which are of the length of about 12 yards. In some instances the paper is tinted so as to form a ground-work for the grain of the material which is needed to be imitated. Near the entrance of the room there is a tank several feet in length, and of a width sufficient to admit a breadth of wall-paper. In this tank there is water to the depth of from 2 in. to 3 in., and at the bottom there is a heavy white deposit, which, even after the water has been disturbed, sinks rapidly back to the bottom. Close at hand are pots, which contain various colours, prepared with turpentine and oil, in which are brushes of a suitable form. When the surface of the water in the tank is still, the artist who superintends this department of the work, and who is now about producing imitations of marble, takes the various pigments, and, as though he were painting on a more solid surface, he marks the veinings of the marble on the still surface of the water in various colours; and it is curious to see how the different forms and colours deposited,—which we should think, but for the gathering-up effect of the next process, form one of the faintest of all pictorial effects,—assume the exact appearance of marble, granite, or other of the very hardest of the earth's substances,—the artist working on water in somewhat the same way as if he were engaged on wood. As he goes on, the colours rise to the surface, and he soon completes a remarkably truthful and clever picture of a slab of the kind of marble mentioned. The light upon the water gives a bright and peculiar glaze, and the white deposit at the bottom of the tank adds to the effect. During the process the artist clears parts of the surface by a deposition of turpentine, acids, or other means which are magical in their effect, and give an air of verisimilitude and refinement to the picture.

The marble picture on the water cannot wait long, or it might lose its crispness and melt away. The paper, however, is prepared to gather up the marble pattern from the unstable surface, and by means of rollers and pulleys, the nature of which could not be well described without illustrations, tinted paper, of the length of the tank, is let gently into it, and is allowed to float for a short time on the surface of the water, whence it is raised by simple machinery, turned picture-side upwards, and laid on a flat slab; when the impression taken from the water is improved in various ways and toned, and blended together by means of tints applied by brushes. In due course the paper is varnished, dried, and flattened, and then we have a well-known material for wall covering, which is capable of being washed when it has become dirty.

In parts of the manufactory, wood and other surfaces are being imitated. The pieces of paper are laid on tables, and by a methodical process the men and boys apply the needful colours. For instance, a boy with a brush filled with a suitable tint makes certain marks; others follow; and, with considerable rapidity, the slips of paper begin to assume the appearance of the material to be imitated. Meanwhile a more skilled workman moves about, touching here and there, and giving emphasis where needed, darkening or lightening, and blending in the parts required. For the covers of school-boys' copy-books, and in other ways, the use of marbled papers, some of them of a very beautiful kind, was more in fashion a few years ago than it is at the present time.

ARE THERE ANY *OLD* ARCHITECTS, OR THEIR WORKS?

WILL you kindly allow me to ask a very great personal favour, through the *Builder*,—where it must be seen by everybody in the least interested or concerned?—it is, that the *lumber* which at present exists, in the shape of empty record-cases and rotten flooring, may be carted away from the Westminster Chapter-house, so as to enable me or any other solitary who may feel interested to see, and study, and read the hand-writing on the walls of that hitherto preserved ruin of a good thing. It will cost nothing, for anybody dealing in old wood will cart it away free of expense for firewood. Nothing can be done with the building itself till Parliament grants the money for the sponging out of the old writing; but biding that event, and between now and then, let us be privileged to see all that is left of it in its original unrestored, or rather unmutilated, state. This will guide us to an understanding of what an *old* architect was, and did; and thus, perhaps, in time, to what a *modern* architect ought to be, but is not;—a most interesting question just now, for is not the world asked through its great speaking trumpet, "What is an architect?"

Let us all recollect, too, that this ruined remnant of the work of an artist-architect and architect of the works is now unhappily the *only*—I must repeat the word, the *only*—bit of stone MS. left in all London, as it was written without either sponging out or smudging over. The Abbey, of which it was once a part in the good old ignorant days, is fast disappearing, bit by bit, colour and all, and is getting bran new.

Pray, sir, help, and get us the privilege of a glance at the Chapter-house walls and hollow spaces for a few short days, and then good bye! Vanity of vanities!—all is vanity!

C. B. A.

PLAYGROUNDS.

SOME years ago you were good enough to insert a letter from me advocating the formation of playgrounds.

Since then, country local boards have taken up the question vigorously, and most moderate-sized towns have provided parks.

London, from its size, is an exceptional case. Parks have been established; but, from their distance, must be useless as playgrounds to the majority.

In my opinion, the local boards of each district should buy a piece of land, to be set apart for the public playground; and should look upon the necessity of this as being nearly as urgent as good drainage. London spreads at a nearly equal ratio annually. By a little foresight, land could be secured cheaply for this purpose in spots over which buildings at this rate must come.

Take, for instance, Forest Hill, or Sydenham, or Croydon: all the land is being rapidly turned into streets; in a few years there will cease to be the country. Then the better class will go further off, and the locality go down. Thus the householders or owners suffer, as well as the inhabitants; and the question is, Would it not pay in the long run for all to be made to join in providing open spaces where a mother could send her children to play out of harm's way, and all classes could play in the evening at cricket, quoits, &c.? I know it would; but I suppose it is the old story, "Everybody's business is nobody's."

Again, what objection can there be in turning the City churchyards into playgrounds? Also those parts of underground railways which must be covered over, yet cannot be built on?

The good influences arising from such a measure are too many to be compressed into a note like this, and will at once suggest themselves to your readers.

J. P. WATERSON.

SCHOOLS OF ART.

The Stourbridge School.—The annual meeting of this school was held at the school, Lord Lyttelton, lord-lieutenant of the county, presiding. For two days prior to the meeting there was a public exhibition of works of students. A considerable quantity of engraved glass was shown. The Chairman, in opening the proceedings of the meeting, said, that having read the report of the council, and the report of the head-master to the council, he was glad to find that the prospects of the school were steadily improving. In a district like that, it was obvious that the arts of design and drawing must be of much greater importance than they were in many other districts. In the glass-works, the iron-works, and hardware-works of various kinds carried on in that neighbourhood, they were of more importance than perhaps they were in any other. There had been a steady increase in the attendance of the students, and in the distinctions attained in the school, ever since it was opened; and, relatively, this year was better than any previous year. The report stated that the number of students had, in every year since 1857, maintained a steady increase, rising from 89 to 143 in the past. The report then went on to state, that if forty students could be added to the number attending, the school would be in a position of freedom from all the disturbing financial influence of the last three years. There is a mortgage debt of 640*l.* upon the building.

ARBITRATION IN THE BUILDING TRADE AT WOLVERHAMPTON.

THE first dispute in Wolverhampton since the new rules between the master builders and the carpenters were framed was amicably settled by arbitration. The builder who has the contract for erecting the new circus, a temporary timber building in Darlington-street, employed some of his men part of the day in the workshop and the other part upon the circus, which both parties agreed was an unprotected building. By rule 4, it is provided that "men working on unprotected buildings shall be paid one halfpenny per hour additional (to the 5½d.) for six weeks before and six weeks after Christmas Day." By rule 5, "the shops and works shall be open from six o'clock in the morning till half-past five o'clock in the evening, for the first five working-days of the week, ... allowing one hour and a half per day for meals; but from six weeks before till six weeks after Christmas Day, workmen on unprotected buildings shall work from seven o'clock in the morning till five o'clock in the evening on the first five working-days of the week . . . with one hour per day allowed for meals." The men were dissatisfied with the construction put upon these rules by their masters, and called for an arbitration under rule 1. The umpire, Mr. Rupert Kettle, appointed Monday last, at the Swan Hotel, at seven o'clock, for the arbitration meeting, and our reporter was admitted. The whole of the delegates from the masters and the men, under rule 1 (six of each), were present, and also the masters and two delegates appointed by the men from the establishment in which the dispute had arisen.

Both sides having stated their case, the umpire decided in favour of the men.

ARCHITECTS' CHARGES.

SIR,—Before noticing Mr. Tarbuck's remarkable discovery, will you allow me to correct one mis-statement in his letter of December 9th. He says, I wrote four columns "contending that the architect should charge, not according to the expenditure, and the trust implied by such expenditure," and "not according to the market value, which regulates other matters (even a 'Paradise Lost,' &c.)." Now, I certainly derided the former proposition,—the more you trust me the more I will charge; but what did I say about market value? Your readers can see, p. 799. "G. W." wrote the next week, p. 821, that in America he simply made every job a matter of special bargain, *i. e.* of market value; to which I replied, p. 829, that I saw "no great objection" to his method, meaning (as the context will show), no objection *as far as it went*; but it was deficient, in not providing for artistic variation of details; accordingly, in giving him my method (for which he asked), I added, that every varying detail I simply made (as he made the whole job) a matter of market value. Well, then, who contends against market value, or who has accepted it—I, or Mr. Tarbuck?

Now for his notable discovery, that "area of flooring" is "another phrase conveying virtually the same meaning" as outlay. It seems to me, that should Mr. Tarbuck have a customer who sees the *Builder*, that customer may find some practical use in the discovery. Observe, that Mr. T. says "universally accepted rules govern all" architects' fees; consequently, what those rules gave, or would have given Capt. Fowke in a given case, would be regular also for Mr. Tarbuck in that case. Now, we have been told, in Capt. Fowke's obituary, last week, of a drill-shed, covering forty squares, and costing 100*l.*; for which, therefore, by the laws of the Medes and Persians, a F.R.I.B.A. should have received exactly 5*l.** Mr. Tarbuck, I suppose, will not deny that. But he also tells us it is a "sophism of equivocation" to suppose my rule really different from his. It conveys "virtually the same meaning,"—so that it cannot matter which is applied. Well, then, let the customer apply mine, and as the payment for Captain Fowke's building would have been 2s. 6d. per square, let 2s. 6d. for each square of flooring in Mr. Tarbuck's building be paid him. If he sues for more, as the "custom of architects" is producible in court, so I presume will the plaintiff's own printed letter be producible, to show that according to himself, this rule "amounts to such," and has "virtually the same meaning."

EDWARD L. GARBETT.

P.S. "Honestas" must be, indeed, a disinterested looker-on, to fancy he can separate the question of an architect's payment from that of "his position, whether he is the builder's partner or servant," or the building owner's. What on earth does "Honestas" suppose can make or define which he is, but his basis of payment? If his fee is proportional to, and reckoned from, the builder's receipts, then he is the builder's partner, the servant of none else, and none else ought to pay him. It is this *proportionality* which constitutes partnership, and even in the eye of the law, I question if it matters a straw *by whom* the payment is made. Does "Honestas" suppose a talismanic virtue or vice imparted to the coin by its last handler? If I took per-centage at all, I should always take it through the contractor, who pays it willingly, instead of direct from the building-owner, who, unless a fool, will always grudge it. But if you can get it, like engineers, from all sides, and all parties concerned, that is the fun. If public companies bargain to pay their architects, not in shares (and those made untransferable), but in hard money, and that a percentage on the outlay; and if they or any one let their architects choose their builders for them; and if poor animals without understanding, an apostle says, are "made to be taken and destroyed;" pray what will any one tell me such companies or owners are made for, but to be fleeced? Let "Honestas" consider whether they and their cash be not best apart, and whether whoever helps effect that separation be not a public benefactor.

E. L. G.

STRENGTH OF TIMBER BEAMS.

PERMIT me to offer many thanks to Mr. Tarn for his attention to my inquiry; but I am not satisfied with his reply. Allow me to state my reasons?

Barlow, as I premise, puts a straightforward deduction apparently without a reservation. But Mr. Tarn says,—"From the very nature of the investigation, experiment is out of the question, for the formula is deduced on the hypothesis of the deflexion being *very small*. If we get beyond very small deflexions, the formula ceases to be of any practical value, the object really being to ascertain what weight may be laid on a beam without producing any *perceptible* deflexion, which is the practical question."

Mr. Tarn thus assumes, first, that the deflexion mentioned in Barlow's statement *is very small*; and, secondly, that the inquiry is after an *imperceptible* deflexion. But is this Barlow's inquiry? Mr. Tarn also assumes that Fenwick has explained the matter by the formulæ, in his reply. But how did that author arrive at them? By copying the altered edition of Barlow's work of 1851? Fenwick's formulæ are in the same proportion, 1 : 16, as stated in that edition. But from whence derived are the figures 3 and 48 adopted in the formulæ? Obtaining this information may probably decide which of the two authors is correct.

Fenwick, fortunately, puts a case in point:—"A bar of elm, 10 in. square, projects 10 ft. from a building in which it is firmly fixed; find the greatest amount of deflexion which it would sustain by suspending a weight of ¾ of a ton from the extremity, the modulus of elasticity being taken at 700,000." From his formula, Fenwick gives the "answer, 1·65 in." Surely 1¾ in. thus obtained in a length of 10 ft. *is a sufficiently appreciable* deflexion to be found by experiment.

My question is, in fact, this:—If in the above case the deflexion is 1·65, will the deflexion of a similar sized beam, double the length, supported at both ends, and carrying 1½ ton in the centre, be 1·65 or ·825? Surely even ¾ of an inch in 20 ft. is an *appreciable deflexion* to be found by experiment. Has it been tried?

There are several points in connexion with Mr. Tarn's reply, to which I should have been glad to advert, but they would have led me astray from the subject of inquiry.

A STUDENT.

* This is not exactly correct: no per-centage is fixed by the published scale for buildings costing that amount.

A NOBLE FOUNDATION, AND POOR ALMSHOUSES.

SIR,—Her Grace the Duchess Dowager of Leeds is now instituting an asylum and place of education for 100 boys and 100 girls, at a total outlay, including buildings, doubtless much minor here to endowments, of 70,000*l.* "May her shadow never be less" in this world, with hope beyond; and her memory

"Smell sweet, and blossom in the dust!"

About the "poorest almshouses in England" now are believed to be those ostensibly founded by the Russell family at Woburn, Beds; actually, however, "founded in exchange" for charity and town lands, partly given by a Sir Francis Staunton, a native, early in the seventeenth century. The same rather singular plan of "charity by exchange" appears to exist at Tavistock. At Woburn, twelve poor folks had, about 100 years ago, per contract at the time, 1s. a week only each, which has never been increased, although the subject has not been unmentioned by the press, nor certainly absent from the thoughts of inhabitants or visitors. These distressed persons, some of whom have "seen better days," are so poor that sometimes, but for the charity of a neighbour, they have had to "dine" off three or four potatoes,—of course, washed down with water. They have no other privilege than the solitary shilling over the other poor; and, of course, the union is obliged to eke out their alms-money with some small allowance, actually to keep them alive.

In justice, however, to that county, it may be mentioned that there are honourable neighbouring contrasts at Dunstable, Ampthill, and Leighton. At the latter, eight almshouses, founded above 200 years ago by a commoner, Matthew Wilks, who also "augmented the poor vicarage," have now, from increased revenue, 8s. a week each, besides some fuel and clothing. Might not a powerful wealthy family, or some pitying stranger, help some, at least, of "the poorest almshouses in England?"

OMICRON.

SOANE'S SARCOPHAGUS.*

THE history of the discovery of this sarcophagus in 1815, by Belzoni, the traveller, is well known. The entrance to the splendid tomb, in the Valley of Kings' Tombs, at Thebes, which contained it, lay covered up under 18 ft. of rubbish in the very bed of a water-course. And yet that tomb appeared to have before been broken into and rifled. The tomb, with its corridors, halls, staircases, pits, cells, and other excavations, was cut entirely out of the limestone rock. The greater portion of it lay beyond a pit or well, 30 ft. deep, right in the way, and all had been closed up by masonry on the farther side of the pit. Nevertheless, some former intruder seemed to have broken through the masonry a hole less than a yard square, through which he had passed, after descending and ascending the walls of the pit by rope-ladders, the remains of which were found by Belzoni. The descent proceeded in different gradients, more or less steep, with staircases and pillared halls on the way, leading farther to a splendid double hall, with columns and a vaulted roof, under which stood the sarcophagus. The lid had been violently opened and broken to pieces, and no vestiges of a body were found in it. Out of the last hall six passages led to smaller rooms. In some of these wooden statues were found, and in one the mummy of an apis, or sacred bull, and innumerable fetish-like small wooden and clay figures of mummy shape. The total length of the passages is 320 ft., and their perpendicular depth 180 ft. From the floor, beneath where the sarcophagus stood, descends another staircase, 300 ft. in length, but so blocked up with rubbish that it has never been explored to the end: so that here may be more mysteries which some day may be cleared up. The body of the king itself may here be found, after all, since no vestige of mummy-case or body existed in the sarcophagus; and the original rifiers of the tomb may have only explored it for valuables of another description. It would even be in accordance with the cunningly-devised schemes of the ancient Egyptians, to secure the eternal repose of their mummied kings, if the whole idea of an already rifled tomb, an empty sarcophagus, and a rubbish-choked final excavation, were an ancient "sell," to secure the extreme end of the tomb from exploration.

The sarcophagus is of translucent alabaster. It was formed of two parts,—the kist and its lid. The material was probably dug out of the quarries at Alabastron, a town on the east side of the Nile. The lid was found broken into numerous pieces, of which there are seventeen in the museum. It was a hollowed block itself, and added 15 in. to the chest when laid on it. The form of the whole is shaped slightly to the form of a human body, or rather of a mummy-case for holding the body; and it is thought that the two solid blocks were first laid one upon the other, and cut outside to the required form, and afterwards hollowed within. The whole, inside and out, is sculptured with the well-known hieroglyphics and symbols of Egypt, the principal of these being the form of the king on the outside of the cover, and that of the Queen of Heaven, or Neith, on the floor of the interior of the kist itself.

"A small round cavity near the back of the head of the goddess Neith, at the bottom of the chest, betrays the manner in which the mason worked. It is about the sixteenth of an inch deep and seven-eighths of an inch in diameter. It was made by a drill, but made unfortunately rather deeper than it should have been. The mason, having cut the outside of the block to its proper size and shape, would seem to have drilled a number of holes downwards, into the body of the stone, to a given depth, and thus he may have lessened the risk of splitting the alabaster with his chisel. Had he attempted to hollow out the sarcophagus with no other tool than chisel and mallet, the danger of splitting the stone would have been very great. The foot or end of the chest is perfectly flat, having been cut by a saw; and at the lower part of the end there are the traces of the fracture, the rough portions left when the other piece of stone broke away, called by the masons 'the saw-break.'"

The stone is so far brittle that it must have required no little skill for the makers to place the heavy lid upon the chest without injury to the edges. To guard against such an accident they would seem to have shielded the edges of both chest and lid with a thin plate of copper.

In the volume under notice, Mr. Bonomi gives, with his careful pencil, a most minute idea of this far-famed sarcophagus. The plates, eighteen in number, present a complete fac-simile of the profusion of sculptures on it, outside and in; and there is a formal letter-press description of every plate according to the views of Mr. Samuel Sharpe, who has certainly shed some special light of his own upon the mysterious subject of Egyptian sculptures; but into this we cannot here enter, although much might be said both *pro* and *con.* in reference to these views.

* "The Alabaster Sarcophagus of Oimenepthah I., King of Egypt." Now in Sir John Soane's Museum, Lincoln's-inn-fields. Drawn by Joseph Bonomi, and described by Samuel Sharpe. London: Longmans & Co.

SCHOOL-BUILDING NEWS.

Shettleston.—On the evening of the 24th ult., a *soirée* was held, on the occasion of the opening of the new subscription schools here, at which nearly 250 persons were present. The chair was occupied by Colonel Carrick Buchanan, of Drumpellier. Due praise was awarded to the architects, Messrs. G. P. Kennedy & Dalglish, Glasgow, for the work. The Rev. Mr. Johnston and other gentlemen afterwards addressed the meeting.

Huddersfield.—The Lindley National Schools, near Huddersfield, with detached schoolmaster's house, built of the native stone, with outsides, are now completed. The schools contain a boys' room, 63 ft. by 20 ft.; girls' room, 65 ft. by 20 ft.; infants' room, 23 ft. by 20 ft.; and class-room, 18 ft. by 17 ft.; all 16 ft. high to the ceiling; with all necessary appurtenances. The house has the usual accommodation. The design is Geometrical, and one of the gables has a pierced bell-turret, with buttress. The cost of the buildings, including boundary walls, heating apparatus, &c., was 1,360*l.* Mr. James N. Crofts, of Liverpool, was the architect.

Heighington (*Lincolnshire.*)—About two years ago, the school and chapel building being very much out of repair and insufficient to accommodate the increased number of scholars, the trustees determined to add a new school and class-room to the old building, and to re-fit the latter and appropriate it exclusively as a place for divine worship. The whole of this programme has now been completely carried out. Sufficient

school-room has been provided, and the old part —of which the most prominent features externally consisted of a pantile roof and pointed wood arches, and internally of two or three square pews, a crowded assortment of backed school forms and desks, a pair of globes on the altar-table, an ugly loft, and a brick floor—has been transformed into a church. The old tower, which shows signs of having been erected in the twelfth century, has been dignified by a parapet, and the tower arch repaired and opened out. The whole of the new work is of the Geometric period of Gothic architecture, and has been done under the superintendence of Mr. Drury, architect; the school part by Mr. Barker, of Lincoln; and the chapel part by Mr. Lovelee, of Branston. Mr. C. Seely will give a stained-glass window at the east end in memory of his mother.

WEEKLY TENANTS AND RAILWAY COMPANIES.

THE RAILWAY EVICTIONS IN SOMERS TOWN.

JUDGMENT affecting the weekly tenants removed by the Midland Railway Extension from Somers Town was given in the Bloomsbury County Court, December 15.

Mr. Merriman (of the firm of Merriman & Buckland, No. 33, Poultry) appeared for numerous poor people, the plaintiffs in equity and the defendants in ejectment; Mr. T. C. Jarvis (instructed by Messrs. Walters & Gush, of Basinghall-street) represented the defendants in equity and the plaintiffs in ejectment.

The case had been before the Court three times, and involved many intricate points of equity and law which may be thus summarised:—It was admitted on both sides that the law gives no compensation to weekly tenants, but Mr. Merriman contended an equitable interest had been created by the transactions between the landlords (Mills and Perry), and the Midland Railway Company. These persons (plaintiffs in ejectment), contracted with the company to sell their large property in St. Pancras for 19,500*l.*, but subsequently, by a letter produced, offered to clear the people out for a further sum of 200*l.* This latter offer the company accepted for reasons given in the evidence of Mr. Beale, their solicitor, who stated "that if he had not so arranged with the plaintiffs in ejectment he would have given their tenants small sums by way of gratuity." Upon this evidence Mr. Merriman, who quoted a number of authorities, contended that an implied or constructive trust in the 200*l.* had been created in favour of the persons whom it was sought to turn out of their homes and shops, for which many of them had paid premiums and expended money in fixtures and improvements. He therefore prayed an injunction under the "New Equitable Jurisdiction" of the Court to restrain its own legal process until the hearing of his suit in equity, on the 16th of January next. On behalf of the plaintiffs in ejectment, Mr. Jarvis contended that the 200*l.* was a payment for the services of his clients to the company, and that the tenants had no right or title to any part of the money.

The Judge, Mr. Russell, having taken time to consider the matter, gave judgment on Wednesday last on the equities of the case. He said he must dismiss the motion for an injunction, but at the same time he felt the hardship of the tenants' case, and expressed his regret at the decision he was compelled to arrive at.

CHURCH-BUILDING NEWS.

Ardwick.—The parish church of St. Thomas, Ardwick, has been re-opened, after having been closed for alterations about four months ago. The entrance chiefly used was at the eastern end, close to the altar rails, which were high and uncomfortable. These and other evils have been remedied, and improvements effected. New passages for access to the seats have been formed, and the new seats have been constructed almost entirely out of the old materials. In doing this it was discovered that the greater part of the flooring-boards, and also the joists which carried the floor, were so decayed as to make it wonderful how it contrived to support the Sunday's congregation. A new vestry for choristers has been built, and that for the clergy enlarged. The organ has been brought down from the west gallery to the south-east corner of the church, to be near the choir. The western gallery, which had been added to at different times, has been reduced to more moderate dimensions, and fitted with seats for the school children. In doing this it was found that the pillars that should support the gallery had given way, and that in all probability within a few months the west gallery must have fallen. Besides this re-arrangement and re-fitting, the church has been painted and decorated throughout. The builder employed was Mr. Wm. Clark; the painters, Messrs. Ward & Harwood; and the architect who designed and superintended the alterations was Mr. J. Medland Taylor.

Aylesbury.—The ceremony of consecrating the new chancel which has recently been added to Walton church was performed on the 5th instant, by the Bishop of Oxford. The character of the building is designed for utility rather than for architectural display. The work has been carried out by Mr. D. Brandon, of Berkeley-square, architect; and the builder is Mr. G. Cooper, Aylesbury. The new chancel is 25 ft. long, and is built of flint and brick. The form of the windows is Early English, with plain chamfered mouldings. The east window is filled with painted glass, in Early English style. A vestry and chancel aisles have been added, the north aisle being appropriated to the organ, while the south aisle is made available for additional sittings, to the number of about forty, besides additional seats for ten choristers. The original contract was for 277*l.*, to which some extras must be added.

Ide-hill.—The newly-erected church, in the parish of Ide-hill, has been consecrated by the Archbishop of Canterbury. The church is in the Geometrical style, with an open roof, supported by six arched principals, and consists of nave with north porch, chancel with recessed arch for organ, two small transepts, vestry on south side, and tower on north, 60 ft. high, surmounted by an oak-shingled spire of 30 ft. more. There are in all eight stained-glass windows;—the east windows and two small side lights presented by the representatives of Bishop Porteus; the west window, presented by the Dowager Lady Rycroft, in memory of her husband, the late Sir Richard Rycroft, and their youngest son; three on the south side, comprising one by the Rev. J. Woodhouse; a second in commemoration of the day (St. Andrew's); and the third by Mrs. Woodhouse, in memory of her mother, Mrs. Oxenden. There is also one on the north side, by the Rev. J. Woodhouse and Sir Nelson Rycroft, jointly, in memory of the bishop. The church has also received much internal decoration. The builder was Mr. J. Kirk, of Woolwich. The architect was Mr. Charles H. Cooke, of London.

Weybread (Suffolk).—The church here has been re-opened. The edifice had been disfigured by pews. These have now been replaced by oak benches, restored from poppyheads on some of the old pews. The west gallery is also cleared away; so that the whole of the nave is now seen to the best effect, and the entire length of the church is increased, and several of the windows have been restored. The roof of the nave is entirely new; it is of deal, stained and varnished. The ribs are continued down the walls through a cornice, and are finished with corbel heads of stone. Those next the chancel represent St. Peter and St. Paul, and the others the minor prophets. These heads were executed by Mr. Barrett, of Norwich. The roofs of the aisles are of oak, and during the recent alterations they have been entirely restored and re-leaded, and all the windows are now glazed with cathedral glass. The chancel roof has also been restored and re-leaded, and three new windows have been inserted. These windows are in the Decorated style, and the east window will be filled with stained glass, by Messrs. O'Connor. A new vestry has been erected on the north side of the chancel, and immediately contiguous to it an organ chamber, which opens upon the north aisle by a pointed arch, and upon the chancel by another, somewhat smaller. The latter is fitted with a carved oak screen, in the Decorated style, by Mr. Cornish, of North Walsham. The pulpit and reading-desk are of carved oak. The organ chamber is occupied by one of Messrs. Bevington's organs in a Gothic screen case of deal, stained and varnished. The church is now entirely floored with tiles except the benches, which are boarded and raised a few inches from the floor. The building is warmed by Gidney's apparatus, placed beneath the floor in the centre of the nave, and the chimney shaft is carried up inside the tower. The font is not yet fixed, but a new stone one is in course of preparation by Mr. Vine, of Eye. The works have all been carried out by Mr. R. M. Phipson, of Ipswich and Norwich, architect. The benches, the roof, and the general work were contracted for by Messrs. Botwright & Grimwood, of Bungay and Weybread. The carving of the benches was done by Mr. Stopher, of Ipswich. The total amount expended in these works was about 1,500*l.*

Great Hautbois.—The church has been lately decorated by Mr. Huggins, of Norwich, at the expense of the rector, who has already contributed largely to the building of the fabric. The commandments have been written on the east end, while the space below them has been filled with stained work of different patterns. The roof, both of the nave and chancel, has been painted, and the panels of both decorated with gilt stars. Several texts are inscribed on the walls. Five stained-glass windows have been put in by the rector's friends, and another is about to be ordered of Messrs. J. & J. King, of Norwich, for the south chancel window, similar to one lately put in by them at the west end of the south aisle, in memory of a late parishioner.

STAINED GLASS.

Worcester Cathedral.—The memorial of their deceased "brother," Mr. Joseph Bennett, erected at the cost of the Freemasons of this city and county, in the north-eastern part of the nave of Worcester Cathedral, by permission of the dean and chapter, has been placed *in situ*. The artists were Messrs. Lavers & Barraud, of London. The window is one of three lights, with geometrical tracery in the head. The base is composed of three panels, representing Masonic emblems of different degrees. Above the emblems the principal portion of the lights is occupied by figures, representing Faith, Hope, and Charity, under canopies, with the legends "Fides," "Spes," "Caritas;" and in the heads of these lights are small groups of the Nativity, Crucifixion, and Resurrection of our Lord. The connexion between these subjects and the principal figures is understood to be,—Faith in the coming of Christ to redeem mankind; Hope in the sacrifice upon the cross; and Love for Him "who is risen from the dead, and ever lives to make intercession for us." The tracery lights are occupied by a figure of our Lord in glory, surrounded by the four beasts, emblematic of the four evangelists, and by the Heavenly Host.

St. Mary's, Reading.—The stained-glass east window in this church, by Messrs. Clayton & Bell, has been completed. There are six lights filled with stained glass. The subjects depicted are numerous; comprising, on the north side, the Annunciation — Salutation — Nativity — Flight — Christ found in the Temple — the Miracle at the Marriage Feast—and medallions of SS. Peter, Andrew, Simon, John, Philip, Jude, James, Barnabas, and Matthew. On the south: the Woman, a Sinner — the Issue of Blood—the Woman of Canaan—Martha and Mary—Bearing the Cross—Mary Magdalene—and medallions of SS. James the Less, Thomas, Matthias, Mark, Paul, Luke, Stephen, Bartholomew, and Timothy.

DISSENTING CHURCH-BUILDING NEWS.

Peasley-cross, St. Helen's.—The new Congregational Church just erected at Peasley-cross, St. Helen's, has been opened for divine service. The site of the building is at the junction of the present highway and a proposed new street almost adjoining Peasley-cross railway-bridge. The edifice is built entirely of stone, the walling-stones or parapets being from Rainford Quarry; and the ashlar dressings and more ornamental portions from Rainhill Quarry. The structure, which comprises a nave and aisle, with porch and tower and spire, is in the Middle Pointed style. It is of an ornamental character, broken up by a clerestory and by buttresses, ashlar bands, and the tower and spire, diapered and carved. The front gable is pierced by a five-light window, nearly 25 ft. high, the upper portion of which is filled with tracery. This window will light the children's end gallery, and the sittings below will be lighted by a triplet window, which extends to the width of the five-light window above. The entrances are by the tower and porch, with separate porch entrance attached to the tower to the children's gallery. The doorways are deeply splayed, and of large size, with moulded labels and carved bosses. The clerestory is carried on polished red granite columns, with carved caps of Caen stone. At the end of the nave is the communion place and chancel. The chancel is a semi-octagon, with groined plaster ceiling, coloured blue, recessed. On either side of this are vestries, conveniences, and room for preparing hot water; and below the latter is the boiler-house for heating the building. The roof from the inside presents a somewhat semicircular appearance, with divisions for cuspings, which form a ceiling about two-thirds the height of the principals. Stained glass has

been introduced into the clerestory and the east and west windows from the manufactory of Messrs. Pickington, of St. Helen's. The accommodation is for 600 adults and 150 children. The contract has been completed by Mr. William Harrison, of St. Helen's, for between 3,000*l.* and 4,000*l.* Mr. Thomas Oliver, of Newcastle-on-Tyne, was the architect.

Woolton (*Liverpool*).— The Congregationalists of Woolton and the neighbourhood have succeeded in erecting a chapel, the formal opening of which has taken place. The building is of a plain character, and was designed by Messrs. Hay, of Liverpool, architects. It is in the Gothic style, has a small belfry, and in its construction red sandstone has been employed. The internal arrangements are also plain. There is a light open roof of imitation oak. At one end of the building, and contiguous to the entrance, a small gallery has been erected for the choir, whilst at the opposite end is the communion-table, the body of the chapel being divided by two aisles, upon either side of which are ranged the pews, of imitation oak. Lancet windows, of modern dimensions, admit light into the building; over the gallery is a circular window, and at the other end are two windows of stained glass. A pulpit, of Caen stone, forms perhaps the sole attempt at internal ornamentation. It is sexagonal in form, rests upon a series of small pillars, the sides being ornamented with carvings descriptive of Scriptural subjects. The pulpit which, with the fittings, cost 70*l.*, was presented by Mr. Alison. A bell for the belfry was also given by Mrs. Alison. The building, which is intended to accommodate about 420 persons, has been erected at a cost of about 3,200*l.*, the whole of which has been raised, with the exception of about 800*l.* The chapel will, for the present, be in direct connexion with Wavertree Congregational Chapel.

Books Received.

"*The Life of Man symbolised by the Months of the Year, in a Series of Illustrations.*" By JOHN LEIGHTON, F.S.A. With Passages selected from Ancient and Modern Writers, by RICHARD PIGOT. Longmans, Green, & Co., Paternoster-row. 1866.

SOME of our readers will remember, as having been exhibited, the dozen larger drawings with which Mr. John Leighton sets forth, with much thoughtfulness and skill, the life of man and the progress of a tree; but still they will have no notion of the book in which, carefully engraved, they now appear. Extracts from 300 authors, maxims, proverbs, initial letters, and a world of small illustrations, fill 238 quarto pages of fine paper, the whole beautifully printed and elegantly bound. The smaller illustrations cannot be fully appreciated without a magnifying-glass, so full of quips and cranks, quaintnesses and inventions, are they. The selections from the poets are admirably made, and will never tire. When Mr. Leighton says, as he does, quoting Caxton at starting,—"This Booke is not for every rude and unconnynge man to see, but for clerkys and very gentylmen that understande gentylnes and scyence," he does it injustice; for there is something in it to suit all moods, conditions, and minds. An unlucky slip of grammar in the last line of the dedication (to Lord Houghton), "are" for *is*, should be remedied in any unbound copies by a substitute leaf: the book is worth it, and the blot is so ugly.

Scenes from "The Winter's Tale." Illuminators, OWEN JONES and HENRY WARREN. Day & Son, London.

MESSRS. OWEN JONES and Henry Warren have coalesced to produce a handsome bookful of illustrations of "The Winter's Tale," something after the manner of the antique vases, with the words illustrated on the opposite page on a gold ground, and all surrounded with pattern borders exceedingly diverse, and in some cases very beautiful. For our part, we get more pleasure from the last page, with its simple markings of red, blue, and gold, telling the names of the illuminators, and that the designs were drawn on stone by Mr. A. Warren, than from the more elaborate productions. That page being perfect so far as it goes. Fortunately, however, for the publishers, there is an illumination-loving public that thinks differently, and to that we commend the volume. The binding is very elegant, as all that Mr. Owen Jones does in this way is.

"*An Alphabet of Monograms.*" Designed and engraved by HENRY LILLIE. London: Day & Son.

AT the present moment, when a rage for monograms prevails, this little volume will doubtless be found of service by die-engravers, silversmiths, and others. It runs through the alphabet, each page giving a single letter with a dozen combinations. Some are very ingenious, and others, almost as a matter of course, are less easily decipherable than is desirable.

Miscellanea.

METROPOLITAN SANITARY ASSOCIATION.—We have before us a full report of the proceedings at the first Conference of this Association, but are forced to delay dealing with it.

FRENCH ARCHITECTURAL WORKS. — Messrs. Cassell, Petter, & Co. have on view a large collection of foreign architectural works, to which we think it useful to direct our readers' early attention.

THE INSTITUTION OF ENGINEERS IN SCOTLAND. At a meeting in the Hall, George-street, on Wednesday, the 20th of December, Professor Rankine's paper, on "The Tenacity of some Fibrous Substances," was discussed; and a paper on "The Construction of Iron Vessels," by Mr. James Lyall, jun., Sunderland, was read; with others. Endeavours we would willingly help are being made to increase the number of members.

THE THACKERAY AND LEECH MEMORIALS.—On Monday were erected in the corridor leading to the chapel of Charter House, two tablets, appropriately placed side by side, to the memory of two distinguished old Carthusians—William Makepeace Thackeray and John Leech. The *City Press* says,—"They are plain stone tablets let into the wall, and bear Latin inscriptions, of which the following may be given as translations:—'To William Makepeace Thackeray, a Carthusian, Carthusians have had this monument erected. He was born 1811, died 1863, was a scholar 1822 to 1827.' 'To John Leech, a Carthusian, Carthusians have had this monument erected. He was born 1817, died 1864, was a scholar 1825 to 1832.'"

DAMAGE TO THE WOLF ROCK LIGHTHOUSE.—The Wolf Rock Lighthouse, says the *Cornish Telegraph*, is built up as far as four courses of granite blocks will raise it; but these four only just elevate the structure above the natural hollow, somewhat enlarged by blasting and quarrying, in the rock itself. Thirty-two stones of the fifth course were laid, every stone joggled and dovetailed to its neighbours, laterally and vertically, secured in its place by cement as hard as iron, and bolted to the course below by powerful metal bars. This fifth course was just a little ledge, which offered some opposition to the sea, in addition to the rock itself. The sea, moved to fury by the recent gales, has swept away every stone of the fifth course, and in a day the summer's work of sixty men is undone. This labour of one favourable season is valued at 1,500*l.* Every exertion is being made by the Trinity workmen, to repair the damage with the least delay.

THE PRINCE CONSORT'S MAUSOLEUM.—At the late anniversary of the lamented Prince's death, part of the mausoleum was shown. Since the last anniversary some progress has been made with the internal decorations, but the greater part of this was concealed from the gaze of the visitors, portions of the hoarding being still up. In one of the recesses or chapels abutting upon the central chamber seen, the arched ceiling is decorated with a painted picture of Christ bearing the Cross, while two of the side panels are ornamented with sculptured bas-reliefs of white marble, the subjects being the "Expulsion of Adam and Eve," and "Moses lifting up the Serpent in the Wilderness." From the ceiling depends a brass chandelier, with several lamps attached to it. The other recesses are, it is said, also in a forward state. The ceiling of the dome (which is lighted by windows) is of a blue colour powdered with gold stars, the centre being occupied by an ornament. The marble floor beneath the centre of the dome has yet to be finished, and till this is completed the granite sarcophagus cannot be used for the reception of the Prince's remains. The builder engaged on this structure is Mr. Dines.

ABERYSTWITH SEA WALL.—At a special meeting of the town commissioners, held recently it was determined to carry out Messrs. Gotto & Beesley's plan for the proposed new sea wall and terrace. The work is to commence at the new promenade pier, and following the general curved line of the Marine Parade wall, terminate at the existing wall, opposite Terrace-road.

BELLS FOR ST. MARTIN'S, KENTISH-TOWN.—A peal of six bells has been set up by Messrs. John Warner & Sons, at the new church of St. Martin's, Kentish-town. The tenor bell is 40½ in. diameter, note G. Weight of the whole peal, 49 cwt. 3 qrs. 4 lb. The bells bear the following inscriptions:—1. "Time flies." 2. "I call to prayer." 3. "I call to praise." 4. "Live to God's glory." 5. "Let all be thankful." 6. "John D. Allcroft gave us." The same firm has recast the celebrated "Sherborne Bell," presented by Cardinal Wolsey. The weight is 2 tons 6 cwt.

DEATH FROM GAS POISONING.—The coroner for the City and Southwark has held an inquiry relative to the death of a woman who, it was alleged, had lost her life in consequence of a quantity of gas having permeated the earth underneath her dwelling-house. The jury returned the following special verdict:—"That the deceased lost her life in consequence of an escape of gas from one of the mains of the Phœnix Gas Company, and the said death was accidental; but the jurors further say that the work of laying the main from which gas escaped was negligently done, and without sufficient intelligent supervision."

THE LEATHER-LANE DISTRICT, HOLBORN.—Dr. Gibbon, medical officer of health, has examined the houses in Dove-court, Leather-lane, where there have been some cases of fever. He states that those on the north side, viz., 1, 2, 3, and 4, are in a dirty state; Nos. 2 and 3 have their basements occupied in contravention of the law; No. 2 is overcrowded, in consequence of the basement being tenanted by seven persons. In four small rooms there are twenty persons. Dogs are kept in two of these houses, so as to be a nuisance, and injurious to health. Our readers will recollect our own revelations of this neighbourhood, not long ago.

SANITARY STATE OF MARYLEBONE. — The monthly report for November of Dr. Whitmore, the medical officer of health for the parish, says:—"The deaths in the parish during the four weeks of November amounted to 310; the consecutive weekly numbers being 64, 75, 96, and 75; showing an annual death-rate of 24·7 per 1,000 of the population. This return gives a slight increase upon the mortality of the previous month, but a decline of 40 as compared with the corresponding month of last year, and 10 deaths below the average of November for the past nine years. Amongst diseases of the miasmatic order, measles have been the most fatal; whilst, in the northern districts of the parish, sickness from the same disease appears to have been exceedingly prevalent. The mortality amongst infants and young children has been most excessive, and comprises upwards of one-third of the whole number of deaths. Diarrhœa, both in sickness and mortality, has considerably declined; and no single death from cholera or choleraic diarrhœa has been registered."

WOOD. — The British consul at Sarawak (Borneo), writes to the Foreign Office respecting the wood of that country as follows: — "A demand has lately been made by a house in Bombay for a cargo of timber. This is, I believe, the first time the merchants of India have had recourse to this country for such produce. The Indian Railway Company would do well to look to Sarawak for the sleepers and various kinds of timber which they may happen to require for the furtherance of their works in India. It may be mentioned also that the 'bilian,' or iron wood found in this country, is perhaps the only wood which is impervious to the attacks of white ants: when immersed in either fresh or salt water it is never known to have decayed; indeed, though under water for many years, it remains as hard almost as stone. An engineer, who has resided here for the last five years, assures me he has never seen such a thing as a rotten piece of 'bilian wood.'" We have been glad to observe that a cargo of camphor-wood from Sarawak has been imported into Sunderland, and that it is a wood which, it is expected, will be of great value in shipbuilding, particularly for the keels and keelsons of vessels.

Architectural Union Company.—The dividend declared at the last general meeting was 4 per cent., free of income-tax, leaving a balance in hand of 140*l.* 7*s.* 10*d.*

The Building Trades.—The masons in the Halifax district have commenced a movement to have the hours of labour reduced to fifty-two and a half per week.

Lifting a Building.—In Chicago, a building, 80 ft. by 160 ft., five stories high, and weighing 27,000 tons, has recently been raised 2 ft. from its original foundations. It was done by means of 1,580 screws, placed underneath the building and turned simultaneously. The work occupied three days.

The Future of Peckham Rye.—The *South London Chronicle* says:—"The Camberwell vestry have endorsed the recommendation of their select committee, that 100 acres of land must be, if practicable, acquired for the extension of the area of Peckham Rye and its formation into a park. The situation, say the committee, is beautiful, and affords a panoramic view of about 30 miles; and it will form the finest site for a park in the metropolis."

The Right of a Gas Company to Cut Off the Supply of Gas.—A case has been argued in the Bacup County Court, in which Mr. Richard H. Penny, auctioneer, sought to recover 2*l.* as damages from the Rossendale Gas Company, on account of their having, as alleged illegally, cut off his supply of gas. The company had claimed from the plaintiff 7*s.* 6*d.* for gas consumed by a former tenant, who happened to be his brother. The plaintiff declined to pay the bill, alleging that he was not liable, and the defendants ceased to supply him with gas.—His Honour (Mr. Greene) gave judgment for the plaintiff for 10*s.* and costs.

Who shall be the Architect?—"An estimable fellow-townsman," says a correspondent of the *Banner of Ulster*, "a member of the Established Church, recently deceased, left by his will the sum of 4,000*l.* to build a church in the neighbourhood of Belfast. His pastor, to whom he was greatly attached, has a son who is an architect, to whom the deceased gentleman stood in the relation of godfather, and he left it as a dying injunction that this young man should be employed to build the church provided for in his will. He appointed several trustees, some laymen and some clergymen,—to whom his dying request respecting the employment of his pastor's son is well known; but it appears that, as one of the trustees is an architect, his co-trustees contemplate, or have really resolved, to disregard the express wish of the testator, and engage their co-trustee's services. . . . . I understand the testator's god-son is a young gentleman of accomplished ability, and in all respects qualified to carry out creditably his god-father's wishes." Perhaps the trustees do not really contemplate the employment of their co-trustee. The testator's family, it appears, are particularly anxious his last wishes should be honourably carried out by the appointment of his god-son as architect.

Carpet Architects.—A correspondent of the *Society of Arts' Journal*, writing from Smyrna, says,—At this season the small carpet-makers of Ooshak, Koolah, Ahiediz, &c., from the great Turkey carpet districts, come up to Smyrna to sell their year's produce of carpets, prayer-carpets, and rugs. One of these men having a rug with a well-balanced pattern, I tried to learn from him who was the designer; but, partly from suspicion, and partly because I could not hit upon the right word in Turkish, he held me at bay for some time, and said that the women of his family did it. At length, in the course of conversation, gaining his confidence more—for he was proud of having served with the English in the Crimea, and of having sent carpets to England—he told me that a dervish was the *mi'mar*; that is, "architect." Of course I had tried every artistic word without thinking of that. *Mi'mar* is not a bad word, for the style of this and many of the carpets is that of the arabesque ornaments of the mosques and stained glass, having the characters of a school. I have never yet come across an ecclesiastical *mi'mar*, but I have seen recent works of theirs in decoration which attest their living taste. I should like to learn more of this decorative school, which showed many interesting works of the Imperial Ottoman Exhibition in Constantinople in 1863.

Experiments on Rolled Iron Girders.—On the 19th inst. some experiments were performed on the Patent Solid Flange Girders, at Mr. Kirkaldy's testing works, Southwark, in the presence of a considerable number of persons, and will require further notice. Unfortunately want of care in the arrangement of the machinery led to much waste of time and patience.

The Sir Tatton Sykes Memorial.—The memorial erected to perpetuate the memory of the late Sir Tatton Sykes, bart., on Garton-hill top, has just been completed, the top stone having been set a few days ago in the presence of Sir Tatton Sykes and several other members of the family of the deceased baronet. A view will be found in a previous number of the *Builder*.

Cab Regulation in Paris.—All the Paris cabs are now provided with one of those instruments which show the distance travelled by the cab in the course of the day and the time occupied in each journey. The object of this instrument is to protect the cab company against fraud on the part of the cabmen; but if it works well it ought also to protect the public against extortion. Such instruments, however, were known years since in this country, but have never yet come to anything here. The one in Paris may be a new and improved one.

Compensation Case: Thames Embankment.—On Tuesday last, at the Sheriff's Court, Red Lion-square, a special jury assembled under the presidency of Mr. Under-Sheriff Burchell, in the case "Sant and Others *v.* The Metropolitan Board of Works," to assess the compensation to be given for property required for the Thames Embankment. Mr. Hawkins, Q.C., Mr. Lloyd, Mr. Prentice, and Mr. Mellor appeared in the case. The claim as made was 12,493*l.*, and on a second notice from the Board of Works it was reduced to 10,048*l.* for the property and for the deprivation of a waterway. The claimants were the trustees under the will of Mr. James Sant, and the property was connected with wharfs along the river where the embankment was being formed. The property had been taken under the Thames Embankment Act, and the claimants demanded a special jury, under the Lands Clauses Act, to ascertain the sum to be given. There was no view of the property, and a settlement was effected without a long investigation. Under the direction of the Under-Sheriff, 9,237*l.* were awarded for the property, and 811*l.* for injuriously affecting the other property, making the verdict 10,048*l.*

TENDERS

For erection of public-house, Mostyn-road, Brixton, for Messrs. Smallman & Strong. Messrs. Hammack & Lambert, architects:—

Wood & Son	£2,578 0 0
Webb & Son	2,500 0 0
Nixon	2,475 0 0
Hedges	2,457 0 0
Cook	2,295 0 0
Newman & Mann (accepted)	2,250 0 0

For two warehouses, in Bermondsey-street, Bermondsey, for Mr. Richard Heald. Mr. Joseph Gale, architect:—

Sewell & Sons	£3,340 0 0
King & Sons	3,192 0 0
Newman & Mann	2,995 0 0
Hill & Son	2,965 0 0
Wells	2,920 0 0

For warehouse in Bermondsey-street, Bermondsey, for Mr. Cyrus Legg. Mr Joseph Gale, architect:—

Sewell & Sons	£1,290 0 0
King & Son	1,180 0 0
Hill & Son	1,089 0 0
Newman & Mann	1,025 0 0
Wells	920 0 0

For taking down old buildings and erecting six new houses and stable buildings, in Montpelier-street, Brompton, for Mr. R. Lathbury. Mr. Isaac Bird, architect:—

Lawrence & Sons	£4,467 0 0
Brown	4,295 0 0
Gammon	4,273 0 0
Williams	4,190 0 0
Newman & Mann	4,105 0 0
Stemson	3,965 0 0

For completing two semi-detached residences, at Forest-hill, for Mr. James Bell. Mr. H. F. Hooper, architect:—

Evans	£330 0 0
Rowley (accepted)	320 0 0

For marine residences, Dover, for Messrs. Sutton & Potter. Mr. Rowland Rees, jun., architect. Quantities supplied:—

McKenzie	£5,530 10 6
Sims & Marten	5,088 0 0
Stiff & Co.	4,746 0 0
Matthews	4,509 0 0

For alterations and additions to a warehouse, in Silver-street, City. Mr. Herbert Ford, architect. Quantities by Mr. J. W. Dennison:—

		Allowance for old Materials.	
Sandon & Co.	£7,527 0 0	£300 0 0	£7,227 0 0
Patman & Fotheringham	7,297 0 0	150 0 0	7,147 0 0
Dove, Bros.	.....	.....	6,975 0 0
Browne & Robinson	6,991 0 0	150 0 0	6,841 0 0
Myers & Sons	6,899 0 0	198 0 0	6,701 0 0
Bradley	7,767 0 0	110 0 0	6,657 0 0
Brass	6,847 0 0	200 0 0	6,647 0 0
Hill & Sons	6,638 0 0	170 0 0	6,438 0 0
Henshaw	6,345 0 0	275 0 0	6,070 0 0
Rawlins	6,510 0 0	734 0 0	5,776 0 0

For the erection of a new warehouse, in Princess-street, West Hartlepool, for Mr. Matthew Rickinson. Mr. John Tillman, architect:—

For the Whole.

Hirst & Sons	£1,235 0 0
Suggit	1,177 15 0
Johnson	1,173 11 0
Wright	1,142 0 0
Tuke	1,090 0 0
Marshall	986 14 11

Joiner's Work.

Stafford	370 0 0
Thompson	340 0 0
Tuke	264 10 0

Ironfounder's Work.

White	120 0 0

Painter and Glazier's Work.

Windross	18 10 0

Slater's Work.

Salmon	36 0 0

Excavator's, Bricklayer's, Plasterer's, and Ironfounder's Work.

Wright	610 0 0

For the erection of a new lunatic asylum, adjoining the Union workhouse, Hylton-lane Bishopwearmouth, Sunderland. Mr. John Tillman, architect:—

For the Whole.

Jackson	£3,392 0 0
J. & E. Hirst	2,990 0 0
Riddell & Moir	2,738 0 0
Elliott & Harper	2,731 0 0
D. & J. Ranken	2,695 0 0
Marshall	2,603 0 0

Excavation, Drains, Roads, Masonry, Bricklaying, Plastering, &c.

Hodgson	1,230 0 0

Carpenter and Joiner's Work.

Stafford	924 18 0
Armitage	800 0 0
D. & J. Ranken	798 10 0

Slater's Work.

Preston	122 0 0
Dawber & Son	106 10 0

Plumber's, Gasfitter's, and Ironfounder's Work.

Tonkinson	313 14 7
Williams	303 0 0
Whinham	300 15 0

Painter and Glazier's Work.

Bamlett	82 12 0
Stafford	82 12 0
Wood	57 5 0

For St. Peter's Schools, West Bromwich. Mr. Smallman Smith, architect. Quantities by Chadwick, Bros.:—

	Schools.	Boundary Wall.
Hartland	£2,067 0 0	£96 0 0
Cox	2,046 0 0	90 0 0
Thompson	1,980 0 0	96 0 0
Stonehewer	1,710 0 0	81 0 0
Stockton & Son	1,676 0 9	82 0 0
Nadin & Son	1,575 0 0	95 0 0
Barker	1,550 0 0	85 0 0
Fisher	1,553 0 0	78 0 0
Haffner (accepted)	1,385 0 0	78 0 0

Accepted, for the erection of a drapery establishment, in Gateshead. Mr. J. E. Watson, architect:—

First Contracts.

Kyle (masonry, including old materials)	£1,000 0 0
Sanderson (carpentry and ironwork)	1,984 10 0
Hastie (slating, including old materials)	173 0 0
Glaholm & Sons (plumbing, including old materials)	353 4 9
Wilkinson & Co. (plastering)	519 10 0
Firbank & Sons (painting and glazing)	300 0 0

Accepted, for enlarging Marlborough-crescent Chapel, Newcastle-on-Tyne. Mr. J. E. Watson, architect:—

Kyle (whole of the work)	£1,145 0 0

For part of farm buildings, at Hendon, for Mr. J. H. Heal. Mr. E. Roberts, architect:—

Wood	£681 19 6
Plowman	650 0 0
Donne (accepted)	615 0 0

For villa at Basset, Southampton, for Capt. P. M. Woolcott. Mr. Henry Hall, architect:—

Sanders	£2,200 0 0
Stevens (accepted)	2,195 0 0

For music-hall, Dover, for Messrs. Sutton & Potter. Mr. Rowland Rees, jun., architect. Quantities supplied:—

Simms & Marten	£4,090 0 0
McKenzie	3,917 5 0
Stiff & Co.	3,884 0 0
Matthews	3,500 0 0

For sixteen cottages, for the Metropolitan Association for Improving the Dwellings of the Industrious Classes, upon their estate at Penge. Mr. Fred. Chancellor, architect:—

Brown (accepted)	£2,000 0 0